

**MFA Eastside Airfield
Improvements Project Section
106 Technical Report**

Moffett Federal Airfield,
Santa Clara County,
California



January 15, 2021

Sign-off Sheet

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Executive Summary

Stantec Consulting Services, Inc (Stantec) has prepared this technical report on the behalf of Planetary Ventures (PV), which has entered into an Adaptive Reuse Lease with the National Aeronautics and Space Administration (NASA) for the NASA Ames Research Center (ARC) Eastside/Airfield area at Moffett Federal Airfield (MFA). PV is proposing several new improvements at the Eastside portion of the Eastside/Airfield area, including an expanded Bus Maintenance Facility, a new private hangar complex, and a new office building, which have been designed only at a conceptual level at the time this report was prepared. Additional improvements associated with the project include construction of a new aircraft apron adjacent to the East Parallel Taxiway, utility improvements, Air Traffic Control Center (ATCC) camera arrays, Moffett Field Golf Course hole relocation and reconfiguration with expanded parking, and improved automobile, bike, and pedestrian circulation patterns accessing and throughout the Eastside area. All work associated with this proposed Eastside Airfield Improvement Project will be referred to as the “Undertaking.”

As the lead federal agency, NASA is responsible for compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), which requires federal agencies to assess effects of all activities on historic properties. This technical report addresses the requirements of Section 106 of the NHPA, per 36 CFR Section 800, to assess the potential of adverse effects on historic properties. It includes a description of the Undertaking, the establishment of an appropriate Area of Potential Effects (APE), the identification of all historic properties within the APE, and an analysis of potential adverse effects based upon the established Criteria of Adverse Effects.

The APE includes the majority of the Eastside/Airfield area of MFA, as well as the boundaries of the NRHP-eligible expanded Naval Air Station (NAS) Sunnyvale Historic District, and adjacent blocks in Sunnyvale to the east along Enterprise Avenue, including the Lockheed Martin Missile and Space Division (LMSD) campus. The APE is bounded by the levees along San Francisco Bay to the north, U.S. Highway 101 to the south, and adjacent areas to the airfield to the west. The area with the potential for direct physical alterations is referred to as the Area of Direct Impacts (ADI). The vertical APE will vary throughout the ADI with a maximum depth of 50’ below grade at the proposed facilities and 2’–8’ below grade at other site upgrade locations.

Research and survey identified the NAS Sunnyvale Historic District and the Alviso Salt Pond within the APE. Three additional resources that required further evaluation for NRHP eligibility were identified: Building 511, the Moffett Field Golf Course, and the Lockheed Martin Missiles & Space Division (LMSD) Campus. Both Building 511 and the Moffett Field Golf Course were evaluated as ineligible for the NRHP as a result of this study. Due to the highly sensitive nature of the facility and the ongoing programs, a full

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survey and evaluation of the LMSD Campus for potential NRHP eligibility was not conducted; for the purposes of this study, it will be considered a historic property in assessing potential adverse effects.

Historic properties that would be affected by the project include the NAS Sunnyvale Historic District, specifically its contributors Hangar 1; Hangar 2; Hangar 3; Building 55 (Heat Plant located between Hangars 2 and 3); Building 69 (former Inert Ammunitions Storage Building); MF1002 (aircraft parking aprons on the east and west sides of the airfield); Building 158 (Flight Operations Building & Tower on west side of airfield); Buildings 70–74, 143, and 147 (High Explosive Ammunition Magazines) and the Naval Storage Depot (a landscape feature of the district on the east side of the airfield that consists of the open and undeveloped space surrounding the magazines and enclosed by the security perimeter fencing); and various airfield features, including the runways (MF1000 and MF1001), the parallel connecting taxiways (MF1016), and the Ordnance Handling Pad (Building 442). Additionally, the Alviso Salt Pond Historic Landscape and the LMSD campus would be affected. The remaining historic properties in the APE are not anticipated to be affected by the undertaking. Table ES-1 lists the historic properties in the APE and anticipated project effects on each historic property. Based on this study, Stantec recommends a finding of adverse effect for this Undertaking.

Table ES-1. Summary of Historic Properties Affected

Bldg. #	Bldg. Name	Effects
01	Hangar 1	No Adverse Effect
02	Gymnasium/ Balloon Hangar	No Effect
05	Water Tower	No Effect
10	Heat Plant	No Effect
15	Security Station/ Fire Station and Laundry	No Effect
16	Public Works/ Locomotive Crane Shed	No Effect
17	Administration/ Admirals Building	No Effect
17a	Memorial Anchor	No Effect
18	Unmanned Aerial Vehicle Research Building/ Aerological Center	No Effect

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Bldg. #	Bldg. Name	Effects
19	Industry Partners Building/ Bachelor Enlisted Quarters	No Effect
20	Bachelor Officer Quarters	No Effect
21	Garages/ Bachelor Officers Garage	No Effect
22	Garages/ Bachelor Officers Garage	No Effect
23	Carnegie Mellon University/ Dispensary	No Effect
24	Carnegie Mellon University Storage/ Ambulance Garage	No Effect
25	Admin. Building/ Recreation Building	No Effect
26	Gate House	No Effect
32	North Floodlight Tower	No Adverse Effect
33	South Floodlight Tower	No Adverse Effect
40	Flagpole & Grounds	No Effect
46	Hangar 2	Adverse Effect (changes to setting)
47	Hangar 3	Adverse Effect (demolition)
55	Heat Plant	No Effect
69	Inert Ammunition Storage	Adverse Effect (demolition)
70	Fuse & Detonator Magazine	Adverse Effect (changes to setting)
71, 72, 73, 74	High Explosive Magazines	Adverse Effect (changes to setting)
105	Airfield Lighting Vault	No Effect

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Bldg. #	Bldg. Name	Effects
106	Aircraft Compass Calibration Pad	No Adverse Effect
137, 138, 139, 140	Aircraft Fuel Storage Tanks	N/A
141	Tank Truck Filling Rack	N/A
143, 147	High Explosive Magazines	Adverse Effect (changes to setting)
158	Flight Operations Building & Tower	No Adverse Effect
329	Ultra-High Frequency/ Very High Frequency Receiver Building	No Effect
442	Ordnance Handling Pad	No Adverse Effect
454	Ultra-High Frequency/ Very High Frequency Transmission Building	No Effect
511	Weapons Station	N/A
684	Ground Maintenance Storage	N/A
686	Parachute Repair Building	N/A
934	Moffett Field Golf Course Clubhouse	N/A
A1-I1	Housing & Garages	No Effect
MF1000	Runway 32L/ 14R	No Adverse Effect
MF1001	Instrument Runway 14L/ 32R	No Adverse Effect
MF1002	Aircraft Parking Aprons	Adverse Effect (alteration and changes to setting)
MF1003	High-Speed Aircraft Fueling Pits	N/A

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Bldg. #	Bldg. Name	Effects
MF1016	Parallel & Connecting Taxiways	No Adverse Effect
N/A	Moffett Field Golf Course	N/A
N/A	Naval Storage Depot	Adverse Effect (changes to setting)
N/A	Alviso Salt Pond Historic Landscape	No Adverse Effect
N/A	LMSD Campus	No Adverse Effect

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Abbreviations

ADI	Area of Direct Impacts
APE	Area of Potential Effects
BMF	Bus Maintenance Facility
CAANG	California Air National Guard
CFR	Code of Federal Regulations
CPUC	California Public Utilities Commission
DPR	California Department of Parks & Recreation
DFSP	Defense Fuel Support Point
DLA	U.S. Defense Logistics Agency
FAA	Federal Aviation Administration
ICRMP	Integrated Cultural Resources Management Plan
kV	Kilovolt
LMSD	Lockheed Martin Space & Missile Division
MFA	Moffett Federal Airfield
NASA	National Aeronautics and Space Administration
NASA ARC	NASA Ames Research Center

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NRHP	National Register of Historic Places
OHP	California Office of Historic Preservation
PG&E	Pacific Gas and Electric
PV	Planetary Ventures
SHPO	California State Historic Preservation Officer
SOI Qualifications	Secretary of the Interior's Professional Qualification Standards

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Introduction

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1.0 Introduction

Stantec Consulting Services, Inc (Stantec) has prepared this technical report on the behalf of Planetary Ventures (PV), which has entered into an Adaptive Reuse Lease with the National Aeronautics and Space Administration (NASA) for the NASA Ames Research Center (ARC) Eastside/Airfield area at Moffett Federal Airfield (MFA). PV is proposing several new improvements at the Eastside portion of the Eastside/Airfield area, including an expanded Bus Maintenance Facility, a new private hangar complex, and a new office building. Additional improvements associated with the project include construction of a new aircraft apron adjacent to the East Parallel Taxiway, utility improvements, Moffett Field Golf Course hole relocation and reconfiguration with expanded parking, and improved automobile, bike, and pedestrian circulation patterns accessing and throughout the Eastside area. All work associated with this proposed Eastside Airfield Improvement Project will be referred to as the “Undertaking.”

As the lead federal agency, NASA is responsible for compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), which requires federal agencies to assess effects of all activities on historic properties.

This technical report addresses the requirements of Section 106 of the NHPA, per 36 CFR Section 800, to assess the potential of adverse effects on historic properties. It includes a description of the Undertaking, the establishment of an appropriate Area of Potential Effects (APE), the identification of all historic properties within the APE, and an analysis of potential adverse effects based upon the established Criteria of Adverse Effects.

This memorandum was prepared by architectural historian Daniel Herrick, MHC, and archaeologist Michelle Cross, MA RPA, with review by senior architectural historian Garret Root, MA. Mr. Herrick and Mr. Root meet the Secretary of the Interior’s Professional Qualification Standards (SOI Qualifications) for architectural history and history, and Ms. Cross meets the SOI Qualifications for archaeology. Supporting staff on surveys include architectural historian Rebecca Riggs, MA, and archaeologists Leven Kraushaar, MA, and Gilbert Browning, MA, all of whom meet the SOI Qualifications in their respective fields.

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Description of the Undertaking
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2.0 Description of the Undertaking

2.1 Undertaking Location

The Undertaking is located at Moffett Field, California, primarily on the Eastside/Airfield portion of the property. The Undertaking involves construction of several new facilities and associated infrastructure, including a Bus Maintenance Facility, Private Hangar Complex, Office Building, and a variety of utility and circulation upgrades. All elements of the Undertaking are located on the Eastside/Airfield portion of MFA with the main runways and taxiways to the west, the Moffett Field Golf Course to the north, and the NASA ARC property boundary to the west. The facilities are largely centered along the Macon, Zook, and East Patrol Roads that extend north-south through the Eastside/Airfield portion of MFA (**Figures 1 & 2**).

All buildings, elements, and improvements are located within the expanded boundaries of the Naval Air Station (NAS) Sunnyvale Historic District, which is determined eligible for listing on the National Register of Historic Places (NRHP).

2.2 Design Approach

At this time, designs for the proposed facilities are largely conceptual. While the specific details of these designs are likely to evolve as the design process moves forward, general design and performance criteria for the facilities have been established through the visioning, programming, and conceptual phases (see Appendix A for preliminary site layouts and Appendix B for Massing Simulations).

The final designs for all of the infill buildings included as part of the Undertaking will be developed to be compatible within the setting of the NAS Sunnyvale Historic District, while also being differentiated to avoid creating a false sense of historical development on the eastside of the airfield. The final designs for these buildings will meet the Secretary of the Interior's Standards and Guidelines by focusing particularly on creating compatible compositions that utilize features, materials, and elements that are sympathetic to the historic character, spatial organization, and other qualities of the district and its contributors. Specifically, the designs will focus on the following criteria and conditions:¹

¹ The following was derived from National Park Service Technical Preservation Services, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating & Reconstructing Historic Buildings*, revised by Anne E. Grimmer (Washington D.C.: Department of the Interior, National Park Service, 2017).

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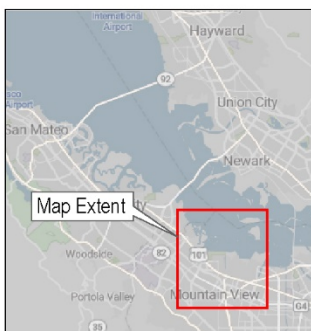
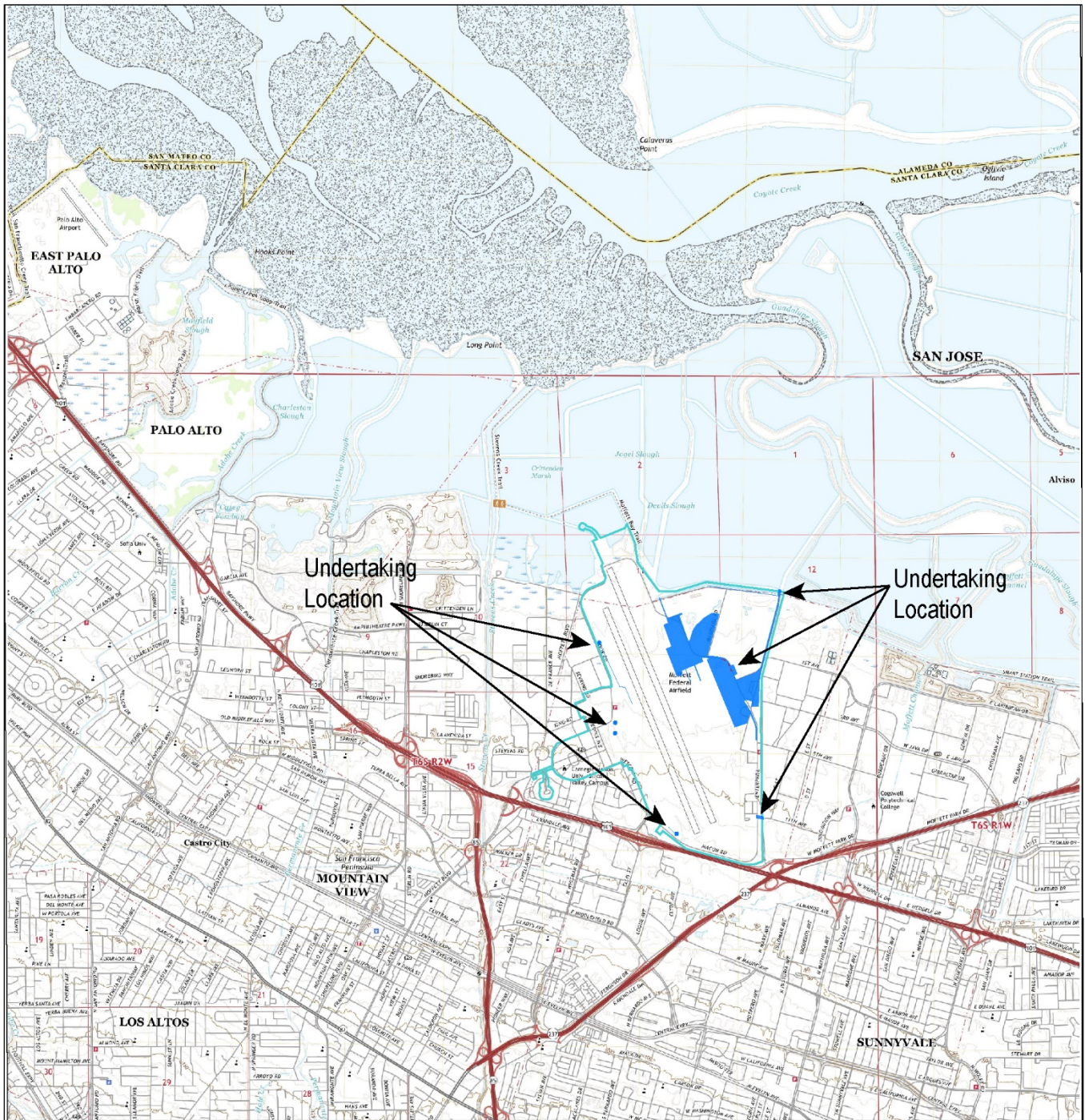
- Design new construction within the setting that is compatible but differentiated from the historic buildings.
- Consider the spatial and aesthetic relationship between the new buildings and the surrounding historic district, its contributors, significant view corridors, overall setting;
- Design buildings that exhibit scale and proportions that are consistent with the setting of the district, while also respecting the visual hierarchy of the space and the most prominent contributing structures therein;
- Employ massing in new designs that is consistent with the character of the district, while also respecting the spatial organization and visual characteristics and corridors through appropriate siting, setbacks, and solid-to-void ratios;
- Use a material palette that is compatible with the established character of the NAS Sunnyvale Historic District, particularly in relation to the contributing properties located on the eastside of the airfield;
- Employ features and forms, such as roof lines, fenestration patterns, façade articulation, and detailing that reflects upon the historic character of the historic district, while also being differentiated as new construction.

2.3 Bus Maintenance Facility

The Undertaking involves expansion of the existing Google Bus services located on the eastern periphery of MFA through the construction of several new buildings and structures. The main element of the Bus Maintenance Facility (BMF) will be the maintenance and operations building, which will be centrally located in the existing bus surface parking lot. Additional facilities include construction of a bus washing building, a fueling and service building, and a large network of solar panel canopy arrays across an expanded dedicated bus parking area. The entire BMF will be constructed over two phases that will, over time, expand the bus parking and operations.

2.3.1 Maintenance & Operations Building

The maintenance and operations building will be located near the center of the existing bus surface parking lot, directly west of Macon Road and the existing Moffett Golf Course. The building will have a rectangular layout and will be two-stories tall, reaching an approximate height of 45' to 50' (see Appendix B for massing simulations). At the ground floor, the building will largely be defined by regularly repeating bays, as well as support facilities located at the central volume of the building, such as locker rooms, offices, and storage. The building will be constructed in phases with the main, central portion of the building constructed in Phase 1, and with additions constructed at the north and south ends to increase capacity in Phase 2.



- Undertaking Area/ Area of Direct Impacts
- Expanded NAS Sunnyvale Historic District

0 0.25 0.5 1 miles



Project Location
T06.05, R02.0W, Sec 11-14
USGS 7.5min Quad:
Mountain View

Client/Project

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Figure No.

1

Title

Undertaking Location

Notes
1. Dept. of the Interior, USGS Topographic Map, Mountain View, CA (2018).

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Overall, the building will likely feature a contemporary style with a predominantly utilitarian aesthetic. The building will have a rectangular massing, which will be broken up slightly by regularly repeating metal roll up garage bay doors along the ground floor and window openings along the second floor. At the center volume, the glazed entrance system will provide access to the main entrance lobby; a metal awning will extend over the entrances. The remainder of the ground floor will feature a concrete masonry unit wall across all façades, whereas metal panels will be installed at upper floors between the regularly repeating, inset glazed and spandrel windows.

The building will be surrounded by surface bus parking, as well as employee automobile parking (see description below in **Section 2.1.3**). Limited landscaping with a simple plant palette and site furnishings will likely be located in the vicinity of the main entrances.

2.3.2 Bus Washing Building

The bus washing building will be a simple, rectangular garage-like building, located towards the northern end of the existing bus surface lot. The building will be approximately 20' tall, constructed of concrete masonry units, and will feature a flat roof profile with simple parapet wall. The building will have a rectangular footprint; it will be oriented parallel with the maintenance and operations building, as well as the existing Hangars 2 and 3 and other features of the airfield. The building will feature large metal roll-up doors at the north and south façades, which will open to the bus washing lanes that define the main volume. The building will also house typical storage, mechanical, and office space, which will be accessed by simple hollow metal doors at both the north and south façades

2.3.3 Bus Parking Lot

The existing bus parking lot will largely be repaved and reconfigured. Along the eastern portion, the existing pavement will be removed and replaced, whereas the western portion of the bus parking, which is defined by the gridded paved surface of the former aircraft parking apron, will be retained and utilized in its existing condition. To increase the efficiency and safety of bus circulation, many existing elements will be removed to allow for the expanded and reconfigured bus parking and circulation including the existing temporary fencing, prefabricated offices, and Building 69 located at the northeast corner of the existing bus parking lot. New pavement will be painted to accommodate the reconfigured parking and circulation paths. In Phase 2, the temporary bus maintenance shelters will also be removed, and this area will be utilized for expanded bus parking.

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New automobile parking for bus employees will be paved at the southeast end of the proposed facility, at the existing fuel farm facility. The existing fuel farm equipment will be removed, and the area will be repaved and reconfigured to accommodate the parking lot. At this location, as well as the location of the replaced pavement throughout the bus parking lot, the depth of disturbance will not exceed the pre-existing built elements. Where new paving is required in areas not disturbed, this will likely occur at an approximate depth of 2'-3' below grade.

2.3.4 Solar Panel Canopy & Bus Charging

In support of future electrification of the Google Bus fleet, the Undertaking will include installation of several large-scale arrays of photo-voltaic solar panels across much of the bus surface parking area, including portions of the former aircraft parking apron. Constructed during Phase 2, each array will be arranged in large rectangular collections installed on regularly spaced metal post framing. The canopy will likely have a slight arc profile and will be approximately 20' tall to allow bus passage and parking. The solar structures would cover an area of approximately 15 acres. Each array will have a different arrangement and overall surface area, which may range from an approximate 1,300 panel modules to over 7,500. All arrays will have a rectangular layout, albeit with different dimensions, and will be oriented lengthwise north-south, parallel with major features of the airfield, including the airfield runways and taxiways, and the monumental Hangars 2 and 3.

In order to install the panels, small select areas of the existing paved surface will be cut in squares to allow installation of the steel support posts. The posts will be regularly spaced and will likely be constructed to an approximate depth of 15' below grade, although this is subject to change as the design develops.

Additional bus electrification elements, namely any future charging stations, are still under development at this time. The elements will likely have a contemporary and utilitarian aesthetic typical of electrical vehicle charging stations and support infrastructure, although the exact configuration, location, and areas of disturbance, are currently unknown and will be explored further through the design process. However, it is estimated that 330 charging stations will be required in support of the fleet electrification.

A new Battery Energy Storage System (BESS) would be installed in the vicinity and would support the storage needs for the bus electrification program. While details about this system are still being evaluated as part of the design process, the facility will likely be located near the canopy array and be composed of battery cabinets, transformers, and switchgear cabinets. The battery cabinets are anticipated to be approximately 8-10' in height. Fire suppression would be provided via a self-contained fire safety system,

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which would include smoke detection, a suppression agent reservoir, and a delivery system appropriate for the specific technology chosen and as required by the NASA Ames Fire Marshal. The whole system would be enclosed by an 8' to 10' chain-link fence. Vehicle impact bollards would be installed to reduce the potential for vehicle impacts to the batteries during operation. Typical depths for the fence and vehicle bollards of 5-10' below grade are likely. The BESS would connect to the Pacific Gas and Electric Company (PG&E) substation to the east via an underground power line. Some minor upgrades to the electrical substation may occur to facilitate electrification of buses. This would provide additional capacity to the electrical grid during periods when traditional sources of electrical generation are not producing power.

2.4 Private Hangar Complex

The private hangar complex will be located on the Eastside/Airfield portion of MFA towards the northeast corner of the airfield, directly east of the East Parallel Taxiway, west of Zook Road, and north of the East Aircraft Parking Apron. Currently, the project site is predominantly occupied by former High-Speed Aircraft Fueling Pits (MF1003), the Ground Equipment Storage (Building 684), Parachute Repair building (Building 686), the existing service yard and the Weapons Station (Building 511), and the 14th hole of the Moffett Field Golf Course. To develop the proposed complex, the majority of the aforementioned buildings will be demolished. Associated site upgrades include construction of automobile parking, aircraft parking apron adjacent to the East Parallel Taxiway, utility upgrades, and relocation and reconfiguration of four westernmost holes at Moffett Field Golf Course, most notably the 14th hole, which is separated from the main golf course by Zook Road. Additional golf course parking will be constructed along Macon Road heading south towards the golf course.

Four private hangars will be constructed over an approximately 180,000 square-foot (s.f.) area. Each hangar would be approximately 45,000 s.f. and up to 70' tall (see Appendix B for massing simulations). The hangars would each have 30,000 s.f. of floor space for aircraft, and roughly 15,000 s.f. of support space. Administrative and shared spaces would likely be set between hangars, breaking up the broader massing of the hangar complex. The private hangars would be constructed as pre-engineered metal buildings with a contemporary style, featuring a combination of materials, such as insulated metal panels, doors, glazing. Clerestory windows and skylights are likely to allow for increased natural light, the latter of which would likely be set behind a parapet wall and not visible from ground level. The west elevations of both hangars will be defined by sliding panel hangar doors, composed of metal panels and glazing. The east elevations will feature the shop spaces, rear façade will feature the single-story shop and storage block consisting of recessed rollup doors for access. The interstitial administrative building between the two hangars would likely be setback and at a

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smaller height to reduce to overall massing of the larger complex, and feature the same industrial material palette for a unifying and symmetrical composition. The main pedestrian entrance will be located at the east elevation of the central administration complex.

The hangar complex would require an elevated construction of 12' above sea level to stay above the 100-year floodplain, which is at 11' above sea level. The elevated construction proposed at 12' above sea level would equate to an approximate increase in 5' above the existing grade at the hangar complex location. Depth of disturbance associated with the complex is unknown at this time and will be determined during ongoing design phases, but will likely exceed 15' below grade.

2.4.1 Access & Automobile Parking

Access to the hangars will be from Zook Road, which will remain in its current alignment. The proposed hangars will include 80 parking spaces located east of the structures and accessible by Zook Road. The parking spaces will include ADA compliant spaces and electric vehicle charging stations throughout the parking area. The parking area will be typical asphalt concrete with an approximate depth of disturbance of 3' below grade. The electric vehicle charging stations will be typical units with an overall semi-industrial aesthetic and approximate height of 5' above grade. Utility upgrades associated with the charging stations will tie into the larger electrical upgrades via new conduits (See Utilities description below).

2.4.2 Aircraft Apron

The new aircraft parking apron will be approximately 350,000 s.f. replacing the existing MF 1003. The apron will be constructed of approximately 15.5" thick concrete; the apron will have a gradual increase of elevation, which will vary the overall depth of disturbance between approximately 2-5' below grade. Signing and striping will be typical airfield signage and will follow Federal Aviation Administration (FAA) Guidelines for aprons, safety areas, hold lines and taxiways. Signage will include typical concrete footings with a depth of approximately 3-5' below grade.

2.5 Office Building

The proposed office building will have approximately 240,000 s.f. of dedicated offices, workstations, an open gathering space, storage, cafeteria, fitness center, meeting rooms, security, mechanical spaces, and other accessory and utility uses. The building will also house remote Air Traffic Control Center (ATCC) operations to replace the existing, outdated Airfield Operations Building (Building 158).

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Overall, the building will have a horizontal rectilinear massing, most likely with a predominantly flat roof profile. The office building will be five stories tall, reaching an approximate height of 90' (see Appendix B for massing simulations).

Aesthetically, the building will be composed in a contemporary style. Conceptual design features include pronounced and repeating structural elements behind a glazed curtain wall, creating an open and geometrical composition. The broader material palette will likely have a contemporary and industrial quality with a mix of textured concrete, prefabricated concrete panels, extensive glazing systems, and a mix of metal detailing, which may include mechanical louvers, spandrel panels, sunshade fins, and perforated screens. Depth of disturbance associated with the building will be determined during ongoing design phases, but will likely exceed 15' below grade.

The site surrounding the office building will largely be typical asphalt surface parking, although it will include simple landscaping elements, such as plaza spaces located near the main entrances with typical hardscapes, site furnishings, and mixed plantings. All circulation – automobile, bike, and pedestrian – to the office building will be integrated into the broader network, including Zook and East Patrol Roads, both of which tie into the Macon Road network. The parking spaces will include accessible spaces, and electric vehicle charging stations throughout the parking area. The parking area will be typical asphalt concrete with an approximate depth of disturbance of 3' below grade. The electric vehicle charging stations will be typical units with a semi-industrial aesthetic.

2.5.1 Location Options

There are two location options being explored for the office building. Option 1, the preferred location, has the building sited along the eastern perimeter of MFA, between East Patrol Road and Macon Road MFA (see Appendix A, figure A-1.1). This location coincides with the existing U.S. Defense Logistics Agency's (DLA) decommissioned jet fuel storage tanks. The DLA's abandoned fuel storage tanks would be removed and hauled off-site by DLA's contractors prior to construction of the office building, and is not an activity that is part of the Undertaking assessed herein.

Under Option 2, the office building will be constructed north of the private hangar complex, located between the airfield to the east, Zook Road to the west, and approximately 250' southeast of the former ordnance handling pad (Building 442) (see Appendix A, Figure A-2.1).

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2.6 ATCC Camera Arrays

Remote ATCC operations will be run out of the proposed Office building, which requires construction of three new camera arrays along the western side of the airfield.

Proposed locations for the end mast camera arrays are at the north and south end of the west runway, and potential locations for the center mast arrays are on top of Hangar 1 or slightly north of Hangar 1 and the West Aircraft Parking Apron (West MF 1002) (Figure 2). The final location of the cameras would be dependent on the results of a siting study which would be conducted during final design. The end mast camera arrays on the northern and southern ends would be mounted on a tower approximately 75' in height, and, if selected, the center mast camera array located slightly north of Hangar 1 would be installed on a tower approximately 125' in height. If the center mast is attached to Hangar 1, the camera array would be mounted to the structure's roof with minimum connection points, leaving most of the structure in its existing condition. The foundations for the towers would range from 6' to 15' below grade, depending on the final height. The potential center array tower is anticipated to be a simple light and open framed structure, set on a foundation of 10' by 10'. The new utility lines to serve the would be installed via horizontal directional drilling at a typical depth of approximately 6' below grade unless existing ductwork is in the vicinity and can be feasibly used in support of the arrays.

The determination of final locations will take into consideration the proximity to areas identified as having heightened prehistoric-era archaeological sensitivity, or to known archaeological sites. Areas located in the proximity of 0'-75' to any known archaeological sites will be avoided for the potential ATCC camera array locations wherever feasible. Between distances of 75'-125' of a known archaeological site, an archaeological monitor who meets the SOI Qualifications for archaeology will be present during ground disturbing construction activities. In the event that a location of an ATCC camera array must be located within 75' of a known archaeological site, an archaeological testing program will be developed and implemented prior to construction. Additionally, the central mast tower option would not be located north of the original paving of West MF 1002.

2.7 Preconstruction Activities

2.7.1 Geotechnical Investigations

Geotechnical investigations of the respective building footprints will inform the proposed Undertaking's designs. Typical geotechnical boring will involve a boring truck being driven to the required location. The bores will have a maximum diameter of 8" and will have an approximate depth between 15' to 50' below grade. The exact number of

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borings at each location are unknown but will likely range between 10 to 25 locations within each footprint, depending on the size of the proposed facility.

Following the sampling, the area where work occurs, whether paved or exposed ground, will be restored to its pre-existing conditions.

2.7.2 Utility Investigations

Prior to construction, utility investigations throughout the project area may be required. Initially, this will involve non-invasive ground-penetrating radar techniques for approximate utility siting. Selective potholing will be implemented to physically confirm the location and condition of the subject utility. Potholing requires the removal of a small slot trench or squared area of approximately 1 s.f. being opened in the surface. A vacuum truck will remove existing materials to the depth of the utility to expose the utility; material removed may extend to a depth of 12" below the utility. Following the potholing process, the area of disturbance will be restored to its pre-existing condition.

2.8 Site Upgrades

2.8.1 11th Avenue & Enterprise Way Gate Activation

Two new chain link rolling gates will be constructed at the intersection of 11th Avenue and Enterprise Way, within existing chain link fencing. Bikes and pedestrians accessing the site from the south will enter through the southern gate. New bike signals will be installed at the intersection and modifications to the existing signage and road striping will be made to accommodate the new improvements. These elements will likely vary in construction depth ranging approximately from 3-5' below grade. The improvements will include a new 12-foot wide multi-use trail integrated into the bicycle and pedestrian network along Macon Road. A new portable streetlight and security camera will be installed at each gate.

2.8.2 Bay Trail Bike/Pedestrian Gate

A gate currently exists at the Bay Trail entrance (where the Bay Trail meets North Patrol Road). Therefore, the only improvements associated with this will be the outlining of a bike lane along North Patrol Road, as well as a new portable streetlight and the PV wireless security camera at the Bay Trail gate location. However, if an existing PV communications pathway is nearby, then hardwiring the PV security camera is preferred. This would include installation of a communications pullbox near the gate, as well as the installation of new utility alignment along either North Patrol Road or along the northern edge of the golf course to connect with existing infrastructure.

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2.8.3 Relocation of Golf Course Holes

Moffett Field Golf Course holes 13, 14, 15, and 16 will be relocated east of Zook Road to facilitate construction of the private hangar complex and automobile parking. Work will include relocation of Hole 13 immediately east of Zook Road, south of Hole 12. Hole 14 will be located immediately east of Zook Road. Hole 15 will be relocated south of the new Hole 14. Hole 16 will be reconfigured but will remain at the current location. Currently, much of the proposed area is used as a gravel stockpile and service yard. The overall depth of disturbance will vary as the site is regraded and contoured for the revised golf courses, although it is unlikely that depths will exceed 2-3'.

The existing irrigation system serving Hole 14 is composed of a 6" diameter irrigation loop. This system will be relocated and reconfigured to serve the reconfigured golf course holes.

2.8.4 Golf Course Parking

Road improvements and widening of Macon Road, between East Patrol Road and Marriage Road, will result in the loss of parking spaces at the existing Golf Course Parking Lot and street parking stalls. The street parking stalls along southbound Macon Road will also be impacted. To offset this lot and provide expand parking capacity for the Moffett Field Golf Course, a new parking lot with 101 parking spaces will be provided east of Macon Road and north of East Patrol Road. All surface parking will be typical asphalt concrete; construction will have a varied depth of disturbance throughout but will likely range between 2-3' below grade.

2.8.5 Utilities

Where feasible, the proposed facilities will use the existing infrastructure; however, where lines are beyond their usable design-life, new utility alignments will be installed. If required, the new utility alignments would be constructed in proximity to the proposed facilities.

The exact nature of construction is to be determined through subsequent design phases for the larger project, although new utilities will likely be constructed via open trenching. Proposed utility lines will likely be installed approximately 2.5-8' below grade via 4-6' wide trenches to accommodate potential conduits of 2-3' width; however, the exact depth and width of ground disturbance will vary depending on the utility and site conditions.

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2.8.5.1 Water

A new domestic water pipeline would tie into an existing 24" line near 11th Avenue and Inspection Road. The potential alignment would then extend north along Inspection Road and Macon Road with service laterals extended to all the proposed structures, extending approximately 7,000 linear feet (l.f.). A pressure-reducing valve would be installed near Hangar 2, and existing low-pressure piping between Hangar 2 and the private hangars would be replaced to improve pressure. Airfield valves west of Hangar 2 would be closed to isolate the MFA low pressure distribution system (see Appendix A, Figures A-1.2 and A-2.2 for preliminary alignments).

2.8.5.2 Reclaimed Water

A reclaimed water system is being considered as optional to serve the office building and private hangars, and is being explored further in the ongoing design process.

The golf course would continue to be served by reclaimed water, but some existing irrigation lines would need to be reconfigured to accommodate the redesign of holes (see Appendix A, Figures A-1.3 and A-2.3 for preliminary alignments).

2.8.5.3 Stormwater

New storm drains would likely be constructed to serve the proposed development. To the extent possible, any new pipe systems would follow the same alignment as the existing pipes. Detention basins would also be created along the apron and Macon Road. Any detention would be designed to attenuate post-development runoff to pre-development runoff levels. The detention basins would drain into the existing stormwater collection systems located throughout the project area (see Appendix A, Figures A-1.4 and A-2.4 for preliminary alignments).

2.8.5.4 Sewer

A new sewer line would be installed parallel to the private hangar complex and would run north to connect to the existing main trunk line that would discharge to the existing pump station located on the golf course east of Marriage Road (see Appendix A, Figures A-1.5 and A-2.5 for preliminary alignments). It would have an approximate length of 3,000 l.f.

A new sewer line for the BMF would connect to the existing sewer lines east of Hangar 3 and would discharge directly to the pump station. The exact alignment is unknown at this time.

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Under both locations, a new sewer line would be installed to serve the office building. The new sewer lines would be installed along Macon Road and would connect to the existing sewer lines traversing through the golf course.

2.8.5.5 Water Storage Tanks

Two new water storage tanks would likely be constructed on the east side of Macon Road, south of the proposed office building. The tanks would have diameters ranging from approximately 50' to 72' and the height (including the dome shaped lid) could range from approximately 42' to 50'. The tanks would provide emergency fire and domestic supply in case of interruption of service from the San Francisco Public Utilities Commission system. The two tanks would be sized to store a total of approximately 1- to 2-million gallons of water. The tanks may be constructed of bolted steel, glass-fused-to-steel, welded steel, pre-stressed concrete, or other composite materials. Supporting infrastructure such as a master meter, backflow preventer, pump station, emergency stand-by diesel generator, and chloramine building would be required to support the tank infrastructure as these are standard components for this critical infrastructure.

The area around the tanks would be paved and access would be provided from East Patrol Road to facilitate long-term maintenance and operations. The tank site area would be fenced off and either wired or wireless security cameras would be provided for security purposes along with motion sensing site lighting with photocells.

2.8.5.6 Electrical

A new loop feed system would be provided via existing ducts from the PG&E substation and new ducts starting above the proposed wash rack area and extending north and east to connect to the proposed BMF and office building (see Appendix A, Figures A-1.6 and A-2.6 for preliminary alignments).

In support of the future bus electrification under Phase 2 of the BMF, upgrades to the existing electrical capacity at the site is likely. Bus electrification would require approximately 50 mega volt amperes (MVA) in additional demand and may require upgrades to the existing substation. The existing substation has two 115 kilovolt (kV)-12kV transformers that are fed from a common 115kV breaker. The 115 kV Pacific Gas and Electric (PG&E) transmission line feeding the substation from the Lockheed substation appears to have a capacity of 65 MVA or greater based on conductor size. Upgrading the feeder (approximately 1 mile from the MFA Substation) could increase the capacity to 145 MVA. PG&E is currently evaluating the feeder and substation capacity, and any upgrades to the substation would be subject to additional environmental review in accordance with PG&E and the California Public Utilities Commission (CPUC).

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The potential ATCC camera arrays will be in close proximity to existing electrical alignments and will use existing ductbanks where feasible. However, horizontal directional drilling for new ductwork may be required, as described under Section 2.4.

New electrical alignment for connections to reach the Bay Trail Bike/Pedestrian Gate will also be installed. The alignment will either follow North Patrol Road or along the northern edge of the Moffett Field Golf Course to reach existing infrastructure. This will utilize typical open trench construction.

2.8.5.7 Telecommunication

Although existing telecommunication lines will be utilized, these will likely be supplemented by additional alignments. At the BMF, the central location will be in close proximity to existing telecommunication lines and limited improvements will likely be required.

At the private hangar complex, the proposed telecommunication line would be looped around the private hangars to provide separated pathways to each of the hangar structures, reaching an approximate length of 1,500 l.f.

For the office building under Option 1, telecommunication lines to the office building would be extended from the existing telecommunication line in located east of Macon Road, at approximately 350 l.f. (see Appendix A, Figure A-1.6 for preliminary alignment). At location Option 2, the proposed telecommunication line would be extended a relatively short distance from the private hangar complex (see Appendix A, Figure A-2.6 for preliminary alignment).

As with the electrical connections, the potential ATCC camera arrays will be in close proximity to existing telecommunications alignments and will use existing ductbanks where feasible. However, horizontal directional drilling for new ductwork may be required, as described under Section 2.4.

New electrical alignment for connections to reach the Bay Trail Bike/Pedestrian Gate will also be installed. The alignment will either follow North Patrol Road or along the northern edge of the Moffett Field Golf Course to reach existing infrastructure. This will utilize typical open trench construction; the trench will be shared with the electrical alignment.

3.0 Background

Originally part of a Mexican land grant known as Rancho Posolmi, the land that is now NASA ARC has been in continuous use since 1844. Use of the land as agricultural

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fields for cattle grazing continued until the US Navy expressed interest in developing the land as an airfield. They were able to secure ownership of the land and established NAS Sunnyvale on August 2, 1931, having purchased it from a local civic group that organized the sale for \$1. Planned as an airfield for the Navy's dirigible rigid airship program, Hangar 1 and the campus around it were completed in 1933. The original NAS Sunnyvale was composed of Spanish Colonial Revival style buildings that were sited on a City Beautiful plan. The Navy used the facilities until they terminated their dirigible program in 1935 and transferred the airfield to the US Army Air Corps, who enlarged the runways and used the site as their West Coast training headquarters until 1942. During this time, a portion of the property was also used by the National Advisory Committee for Aeronautics (NACA), the precursor agency to NASA, who built the Ames Aeronautical Laboratory in 1939, including hangars and wind tunnels for research and testing.

Following the bombing of Pearl Harbor, the Navy took the facility back and renamed it US NAS Moffett Field. During the war they used it as the base for airships that patrolled the Pacific Coast and as a training center for airship pilots and also constructed Hangars 2 and 3 in 1943. During World War II, they expanded Moffett Field, purchasing 225 acres of land east of the airfield and enlarging the runways again. They continued enhancing the airfield in the post-war era, elongating the runways for newer, larger aircraft. With the onset of the Korean War in 1950, Moffett Field was used to train jet pilots and as the home base for Navy fighter jets and the facilities at the airfield were expanded again, with new buildings constructed around the perimeter of the property and both runways extended. By 1962, operations at Moffett Field were switched from jet to antisubmarine warfare, focusing on experimental antisubmarine aircraft, namely the P-3 Orion. The P-3 Orion Anti-Submarine mission would continue operate at the airfield throughout the remainder of the Cold War-era. The mission primarily used the existing structures and buildings, specifically the former dirigible hangars, although several new training and support buildings were constructed during the Cold War period.

Use of Moffett for training operations continued until 1994 when it was closed to military operations and the property was transferred in its entirety to NASA (formerly NACA) for use as an experimental test site. Moffett Field's primary purpose turned to advancing airborne science and technology, including space travel. After the full transfer of the field to NASA, a portion of it including hangars and munitions storage areas was utilized by the California Air National Guard (CAANG) 129th Rescue Wing.²

² AECOM, "Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California," prepared for NASA Ames Research Center (November 26, 2013), 3-2 – 3-7.

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Area of Potential Effects

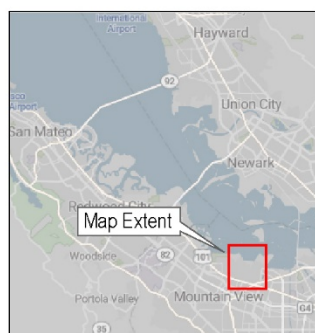
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4.0 Area of Potential Effects

The APE is located within the expanded NAS Sunnyvale Historic District on the northeast side of the airfield (**Figure 2**). For the current Undertaking, the APE boundaries include the majority of the Eastside/Airfield area of MFA, as well as the boundaries of the expanded NAS Sunnyvale Historic District.

The area with the potential for direct physical alterations, referred to as the Area of Direct Impacts (ADI), is primarily defined by the Undertaking area where work is occurring, specifically at the proposed location of the BMF, the private hangar complex, the proposed office building, reconfiguration of the western portion of the Moffett Field Golf Course, and the areas along Macon, Zook, and East/North Patrol Roads where automobile, bike, and pedestrian circulations improvements will occur. The ADI also includes the potential locations of the ATCC camera arrays, located on the west side of the airfield, north and south of West MF 1002 and on the roof of Hangar 1. The ADI will have vertical boundaries where ground disturbing activities will occur; this accounts for the potential disturbance of any archaeological resources. At proposed facilities, the vertical boundaries will have a maximum depth of 50', which coincides with the geotechnical investigation depths. At the proposed aircraft apron, the vertical boundaries are approximately 8' below grade, which accounts for any utility upgrades that will occur at this location. Where the existing 14th hole and other areas of the Moffett Field Golf Course are being altered, the depth of disturbance will vary as large portions of the site will be uniformly graded to allow for the construction of the private hangar parking and access, whereas others will be built up as part of the new golf course holes. It is expected that the depth of disturbance in these areas will not exceed 3-5' below existing grade. At Zook Road, the depth of disturbance will be limited to removing existing road infrastructure, approximately 2-3' below existing grade.

The broader boundaries of the APE account for potential indirect effects, such as visual and atmospheric alterations to the historic setting and sense of place for historic properties. Therefore, these boundaries extend beyond the Undertaking Area where work is occurring. As stated previously, the APE boundaries primarily coincide with the northern boundary defined by the levees forming the shoreline along San Francisco Bay. The western boundary extends south along the perimeter fence of the airfield before following the boundaries of the expanded NAS Sunnyvale Historic District to include the Shenandoah Plaza area of MFA to the intersection of Wescoat and Dailey roads. The western boundary then shifts south along Dailey Road towards the US Highway 101, which forms the southern boundary. The eastern boundary extends north from the US Highway 101 and east along the CAANG cantonment area, following it to the eastern perimeter of MFA to 5th Avenue in Sunnyvale, California. Here the eastern



Notes
1. Dept. of the Interior, USGS Topographic Map, Mountain View, CA (2018).

- Undertaking Area/ Area of Direct Impacts (ADI)
- Area of Potential Effects (APE)
- Undertaking Element Footprints
- Potential ATCC Camera Array Location
Final location(s) subject to change
- Expanded NAS Sunnyvale Historic District

0 500 1,000 2,000
feet



Project Location
T06.05, R02.0W, Sec 11-14
USGS 7.5min Quad:
Mountain View

Client/Project

**MFA Eastside Airfield Improvements Project
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Figure No.

2

Title

Undertaking Area of
Potential Effects (APE)

Figure 2: Undertaking Area of Potential Effects (APE)

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boundary jogs east into the Lockheed Martin Missile and Space Division (LMSD) campus, where it shifts north along H Street and continues north towards the levees at San Francisco Bay.

The location and size of the APE accounts for both potential direct and indirect effects to any historic properties, particularly those within the boundaries of the expanded NAS Sunnyvale Historic District.

5.0 Identification of Historic Properties

Per 36 CFR Section 800.16(1)(1), “historic properties” may include any district, site, building, structure, or object that is listed, or eligible for listing, in the NRHP.

5.1 Archaeological

Ground disturbing activities associated with the construction of the new facilities are located within the ADI, which is primarily located at the northeastern corner of the airfield, immediately north and east of the East Aircraft Parking Apron, east of the East Parallel Taxiway, and includes the western portion of the Moffett Field Golf Course. Additional locations of ground disturbing activities include the select area at 11th Avenue between Macon Road and Enterprise Way, as well as the potential locations of the ATCC camera arrays on the west side of the airfield, particularly north and south of West MF 1002, and their prospective utility improvements..

The majority of these locations associated with the ADI have been subject to several archaeological studies and surveys in recent years. Areas that have not been previously surveyed were subject to pedestrian survey, conducted in 2019 by a Stantec archaeologist who meets the SOI Qualifications for archaeology. The following sections outlines these previous studies and recent pedestrian surveys relevant to the ADI, as well as the potential for any below ground historic properties that may be extant.

5.1.1 NASA Ames Research Center Archaeological Resource Study (AECOM, 2017)

In February 2017, AECOM prepared the *NASA Ames Research Center Archaeological Resources Study (ARS)*, which identified potential archaeological resources throughout the NASA Ames Research Center property, including MFA. The ARS is intended to support the NASA Ames Research Center’s Integrated Cultural Resources Management Plan (ICRMP), which provides guidance for the treatment of cultural

The following content was redacted from this public posting:

Section 5.1. Archaeological
pages 5.20 - 5.35

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unlikely event that archaeological materials are found during ground disturbing activities, work shall be immediately stopped, the NASA ARC's Cultural Resource Manager and Procurement Officer shall be notified, and the appropriate procedures outlined in Policy 8 of the ICRMP, which outlines procedures for inadvertent discoveries, shall be followed.

5.2 Built Environment

In recent decades, numerous studies have documented and evaluated the historical significance of the built environment at MFA. The following outlines historic surveys and studies relevant to the Undertaking and the associated historic properties identified within the Undertaking APE.

5.2.1 Relevant Previous Studies

5.2.1.1 NRHP Listed NAS Sunnyvale Historic District

In 1994, the NAS Sunnyvale Historic District was identified and listed on the NRHP. The discontinuous historic district comprised the original 1930s portion of MFA, also known as Shenandoah Plaza, which centered around Hangar 1 and the western portion of the MFA property, as well as the Hangars 2 and 3 precinct, located on the eastern side of the airfield.³ The historic district was determined significant under Criteria A and C for its associations with the development of US Naval aviation prior to World War II, and for its unifying architecture exhibited by the collection of Spanish Colonial Revival architecture and for the significant engineering exhibited by Hangar 1, as well as Hangars 2 and 3. The historic district is listed with a period of significance spanning 1930 to 1943, which coincides with the construction of the Shenandoah Plaza portion of MFA, as well as Hangars 2 and 3.

5.2.1.2 Historic Property Survey Report for the NASA Ames Research Center, Moffett Field, California (2013)

In 2013, AECOM prepared the *Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California* (HPSR), which identified the NRHP-eligible expanded NAS Sunnyvale Historic District that encompassed the entirety of MFA, primarily the runway network and buildings directly associated with the operation of the airfield and the significant missions. The historic district was identified as significant under criteria A (events) and C (architecture) with a period of significance spanning from 1930-1961. While the revised boundaries of the expanded historic district were concurred upon by SHPO on June 6, 2013, the contributing status of specific

³ National Park Service, "National Register of Historic Places Registration Form – US Naval Air Station Sunnyvale, California," Reference #94000045, prepared by Bonnie Bamberg (1991, updated 1994).

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properties to the district has not received formal concurrence. However, California Office of Historic Preservation (OHP) staff and NASA have agreed upon recognizing the identified historic district and the contributors outlined in the 2013 AECOM HPSR as historic properties for the purposes of Section 106 consultation.⁴

The current Undertaking's location is within the boundaries of the expanded NAS Sunnyvale Historic District. There are several contributing properties and character-defining landscape features located within the current APE (**Figure 6**).

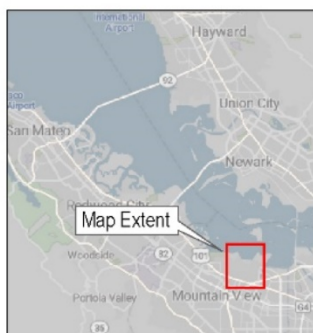
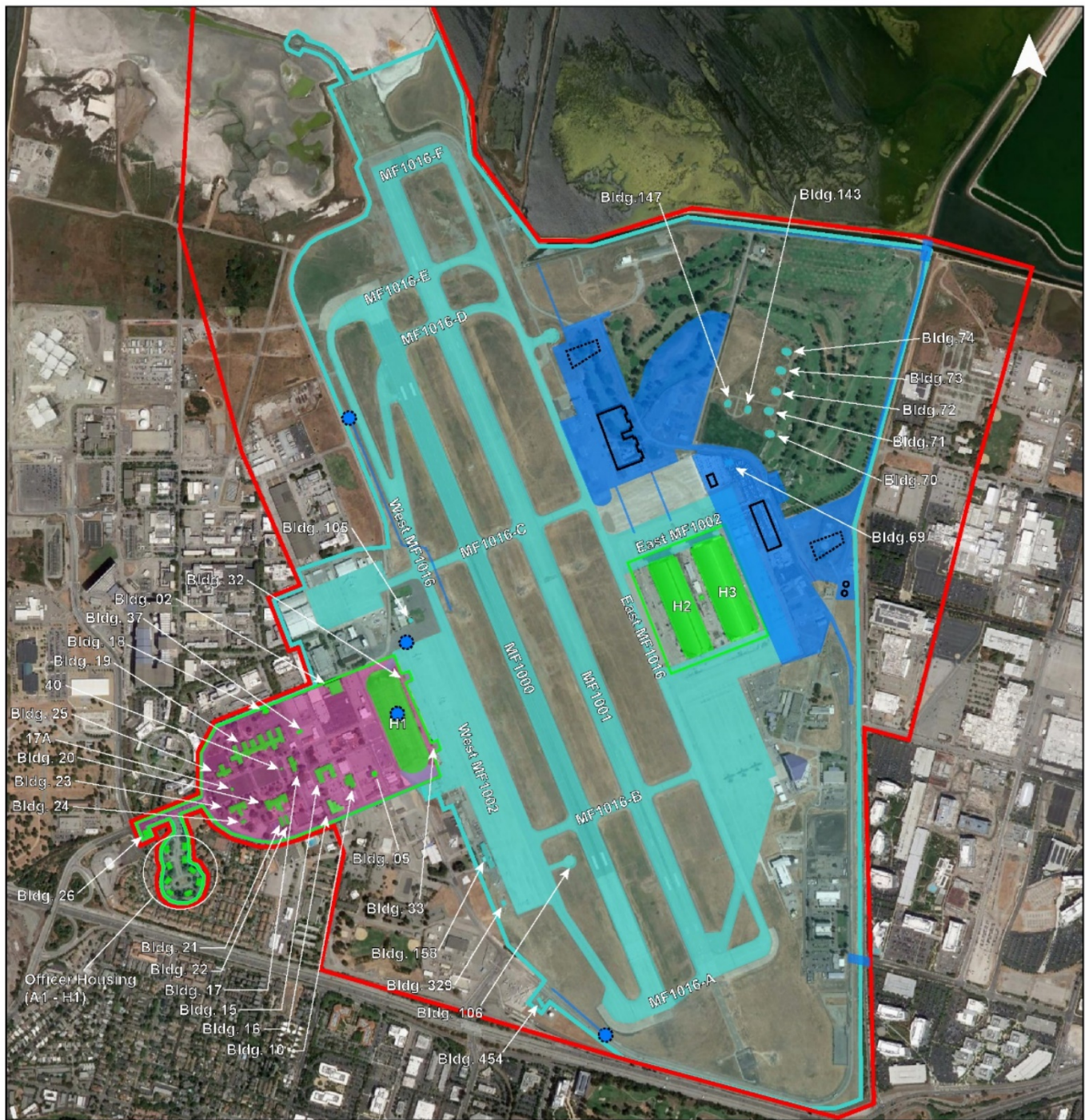
5.2.1.3 Cold War-Era Resources Survey (1999)

In 1999, a comprehensive historical survey of Cold War-era resources at MFA was conducted by Alexandra C. Cole of Science Applications International Corporation. The resulting document, the *Inventory and Evaluation of Cold War Era Historical Resources* (Cold War Survey), outlines a robust historic context of Naval missions at MFA during the cold-war from 1946 to 1989, focusing specifically on the P-3 Orion Anti-Submarine operations. At the time of evaluation, many properties did not meet the 50-year age threshold required for NRHP eligibility, so many properties were evaluated under Criteria Consideration G: "A property achieving significance within the past 50 years if it is of exceptional importance."⁵ As part of the survey, 148 buildings and structures were documented and evaluated.

Properties identified in the Cold War Survey and within the current APE include three buildings: Building 511, Building 684, and Building 686.

⁴ SHPO letter to Keith Venter, Historic Preservation Officer at NASA ARC, "Section 111 Outlease for Hangar One and Moffett Federal Airfield, NASA Ames Research Center, Moffett Field CA" SHPO Reference: NASA_2013_0417_001 (June 6, 2013).

⁵ National Park Service, *National Register Bulletin: How to apply the National Register Criteria for Evaluation* (rev.2002), accessed August 20, 2019, <http://nps.gov/nr/publications/bulletins/nrb15/Index.htm>



Notes
1. Dept. of the Interior, USGS Topographic Map, Mountain View, CA (2018).

- Undertaking Area/ Area of Direct Impacts (ADI)
- Area of Potential Effects (APE)
- Proposed Undertaking Building Footprints
- Potential ATCC Camera Array Location
Final location(s) subject to change
- NAS Sunnyvale Historic District Boundaries (NRHP Listed)
- NAS Sunnyvale Historic District Contributing Property (NRHP Listed)
- Shenandoah Plaza
- Expanded NAS Sunnyvale Historic District Boundaries (NRHP Eligible)
- Expanded NAS Sunnyvale Historic District Contributing Property (NRHP Eligible)

0 500 1,000 2,000
feet



Project location:
TOSGS, #32-2W, Sec11-14
USGS 7.5min Quad:
Mountain View

Client/Project

**MFA Eastside Airfield Improvements Project
Section 106 Technical Report**

Figure No.
6

Title

**Expanded NAS Sunnyvale
Historic District**

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5.2.1.4 Historic Property Survey Report - Defense Fuel Support Point Closure Project (2016)

As part of Section 106 Consultation for the DFSP Closure Project, the AECOM Historic Property Survey Report included a survey of the built environment properties, conducted by qualified architectural historians. This intensive survey included physical descriptions, historic contexts and property-specific histories, and full evaluations for potential NRHP eligibility for the fuel storage tanks (Buildings 137-140) and various elements and structures associated with the existing fuel farm facility. This survey also involved a re-evaluation of MF1003, Building 69, and the Tank Truck Fueling Rack (Building 141), which were previously identified as potentially eligible in the HPSR.

All of the surveyed built environment properties were recommended as not eligible for listing on the NRHP as either individual resources, or contributors to larger historic districts. On June 30, 2016, SHPO largely concurred with these findings that fuel storage tanks, elements of the fuel farm facility, MF1003, and Building 141 were all ineligible for the NRHP and did not qualify as historic properties. However, SHPO disagreed with the recommendation that Building 69 was not a contributor to the broader expanded NAS Sunnyvale Historic District. SHPO requested that the property be treated as historic for the purposes of the DFSP Section 106 Consultation, given that no adverse effect would occur at the property regardless of status. Although further information and analysis regarding its historic status was also requested, Building 69 continues to be considered a historic property as a contributor to the expanded NAS Sunnyvale Historic District.

5.2.1.5 Alviso Salt Pond Historic Landscape (2008)

The Alviso Salt Pond Historic Landscape, or Alviso Salt Pond Historic District, is a large cultural landscape defined by the extensive network of salt ponds located across the southern shoreline of San Francisco Bay. Originally identified in 2008 by US Fish and Wildlife Service cultural resources staff, the Alviso Salt Pond Historic Landscape includes 25 salt ponds, extending over 9,600 acres of the southern shoreline. The landscape is largely defined by the extensive network of earthen levees, which divide the salt concentrating ponds into their distinctive spatial organization.⁶

The landscape was found to be eligible for listing on the NRHP under criterion A at the local level for its association with the Solar Salt Industry and the industrial development of the region during the early 20th century. It has an identified period of significance from

⁶ US Fish & Wildlife Service, "US Fish & Wildlife Service Project #FWS040721A Historic Properties Treatment Plan for the Salt Works within the South Bay Salt Pond Restoration Project at the Alviso Don Edwards San Francisco Bay National Wildlife Refuge" in Appendix F of *South Salt Pond Restoration Project, Eden Landing Phase 2 – Environmental Impact Report* (April 2019): Attachment 2, pg.13-18.

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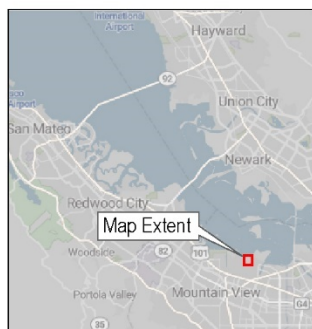
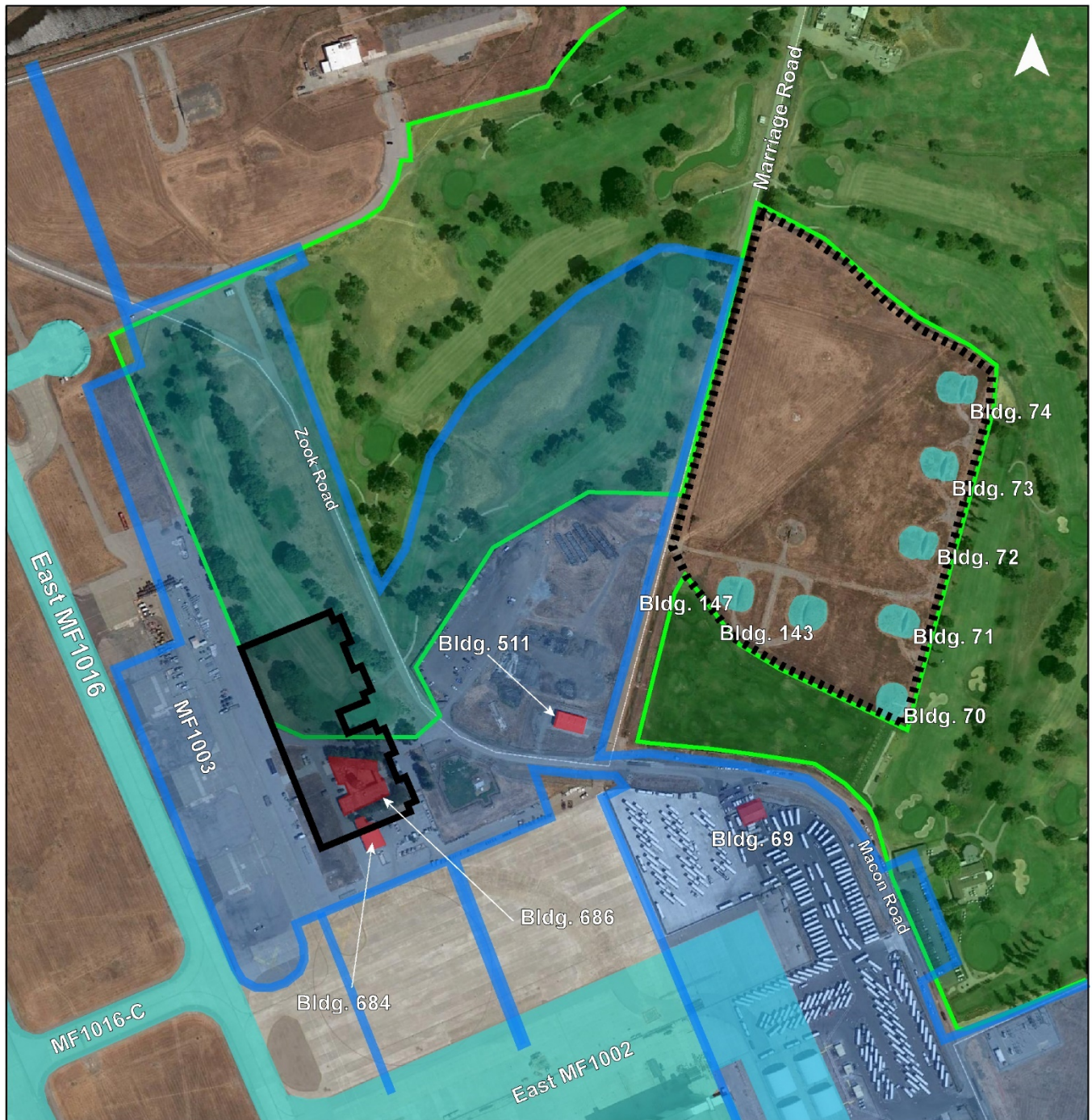
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1920 to the 1950s, which corresponds with the development of the Solar Salt Industry in the South San Francisco Bay Area.

5.2.2 Stantec Built Environment Survey (2019)

In March 2019, Stantec architectural historians Daniel Herrick, MHC and Rebecca Riggs, MA, both of whom meet the SOI Qualifications for architectural history and history, conducted a survey of the Undertaking area, focusing specifically on Buildings 511, 686, 684, and the Moffett Field Golf Course (**Figure 7**). Properties were documented using digital photographs and field notes to capture onsite observations. Additional online and local archives and repositories research was conducted to supplement existing documentation.

The following outlines a brief physical description for each property, as well as background, historic status, and assessment regarding whether the property requires historic evaluation.



Notes
1. Dept. of the Interior, USGS Topographic Map, Mountain View, CA (2018).

- Undertaking Area/ Area of Direct Impacts (ADI)
- Proposed Undertaking Building Footprints
- Buildings to be Demolished
- Expanded NAS Sunnyvale Historic District Contributing Property
- Naval Storage Depot
- Moffett Field Golf Course

0 125 250 500
feet



Project Location
106.05, R02.0W, Sec 11-14
USGS 7.5min Quad:
Mountain View

Client/Project

**MFA Eastside Airfield Improvements Project
Section 106 Technical Report**

Figure No.

7

Title

**Built Environment Properties
Slated for Removal**

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5.2.2.1 Building 511 – Weapons Station

Description

Constructed in 1968, Building 511 originally served as a Missile Integration Facility used in the assembly of bombs and missiles in support of the P-3 Orion Anti-Submarine mission. Building 511, located at the eastern side of the airfield, has a rectilinear plan, and is of pre-fabricated steel construction (**Photograph 10**). The Butler-type building has a low-pitch, front gable roof. There are large steel sliding doors on the east and west elevations of the building and a door with a window located next to the sliding doors on the east elevation. There are eight sliding windows on the building, four on the north elevation, and four on the south. Beneath the windows there are metal air vents, three on the north elevation, and three on the south. The building is surrounded by chain-link fencing.



Photograph 10: North façade of Building 511, looking east.

Historic Status

Building 511 was originally evaluated in 1999 as part of the Cold War Survey under Criteria Consideration G and found not to exhibit exceptional historical significance. The building was noted as having associations with the P-3 Orion Anti-Submarine mission as a weapons assembly facility, however, this is a secondary support function of the mission. Constructed in 1968, the building is now older than 50 years; the property requires additional evaluation per the NRHP significance criteria for potential eligibility (See **Section 5.2.2.4**).

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5.2.2.2 Building 684 – Ground Equipment Storage

Description

Constructed in 1984 as a ground equipment storage facility, Building 684 is a simple, single-story building (**Photograph 11**). It features concrete masonry unit construction, is rectilinear in plan, and is capped with a flat roof with a vertical stack-bond scored parapet wall that extends across all façades. Fenestrations are primarily located on the west façade, facing the airfield, and include metal roll-up vehicle doors, and flush metal pedestrian doors, either single or paired. Other façades feature similar fenestration, although in reduced numbers. The few windows included in the building are metal framed and fixed.



Photograph 11: Primary west façade of Building 684 with roll-up metal garage, looking east.

Historic Status

Building 684 was originally evaluated in 1999 as part of the Cold War Survey under Criteria Consideration G and was found not to exhibit exceptional historical significance. The building, which is a typical US Navy support structure and constructed in 1984, is still under 50 years and does not require additional evaluation. Therefore, Building 684 does not qualify as a historic property under Section 106.

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5.2.2.3 Building 686 – Parachute Repair Building

Description

Constructed in 1984 as a parachute repair building, Building 686 is an irregular shaped building that is predominantly single-story with a large, concrete cylindrical tower at least two stories tall at the center of the building (**Photograph 12**). Fenestration is limited throughout and includes fixed picture windows and paired metal pedestrian doors located on the east façade.



Photograph 12: West façade of Building 686 with prominent cylindrical tower located at center, looking east.

Historic Status

Building 686 was evaluated in 1999 as part of the Cold War Survey under Criteria Consideration G and was found not to exhibit exceptional historical significance. The building, which was constructed in 1984 as a typical US Navy support structure, is still under 50 years and does not require additional evaluation. Therefore, Building 686 does not qualify as a historic property under Section 106.

Moffett Field Golf Course

Description

The Moffett Field Golf Course is an 18-hole, par 72 golf course, located at the northeastern corner of MFA, north of Hangars 2 and 3, and south of San Francisco Bay

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(Photograph 13). Originally constructed in 1959 as a 9-hole golf course, the recreational property is situated around WWII and early 1950s-era High Explosive Magazine Bunkers which were concentrated on the northeast corner of the airfield. Development around the High Explosive Magazines necessitated a low-density use, which the golf course met that threshold.

The original 9-hole golf course was designed by Bob E. Baldock, a prominent California-based golf course architect who designed hundreds of courses throughout the United States. The original 9 holes were located at the eastern portion of the existing site. Around 1968, the course was expanded to its current 18-hole configuration, the expansion included removal of several World War II-era munitions loading circles, which were arranged in an arc at the western portion of the site. The back-nine was designed by Robert Muir Graves, another notable golf course architect who was responsible for a number of noteworthy and champion golf courses throughout the United States and Canada. Based upon several aerial photographs, the golf course does not appear to have undergone changes since it was expanded in 1968. The golf course still surrounds the High Explosive Magazines, which consists of Igloo type magazines, within a perimeter fence.

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Photograph 13: Aerial photograph of the Moffett Field Golf Course looking south. Note the magazines and surrounding undeveloped area at upper left.⁷

Historic Status

The Moffett Field Golf Course does not appear to have been previously evaluated for eligibility in the NRHP. Therefore, the Moffett Field Golf Course requires additional evaluation (See **Section 5.2.2.4**).

Naval Storage Depot

While the Moffett Field Golf Course has not been formally evaluated, the HPSR and a supplemental NASA report suggest that portions of the open and undeveloped areas of the golf course have associations with the Naval Storage Depot, which is historically part of the design and spatial organization of the district-contributing High Explosive Magazines (Buildings 70-74, 143, & 147) located at the northeast corner of MFA.⁸ Specifically, the HPSR indicates that the area now referred to as the Naval Storage Depot is characterized by an expanse of undeveloped area surrounding the High Explosive Magazines primarily constructed during World War II and the post-war period, as a standard precautionary measure. However, the location and extent of the Naval

⁷ "The Golf Club at Moffett Field," Pacific Coast Golf Guide, accessed April 10, 2020, <https://golfguide.net/product/moffett-field-golf-club/>

⁸ AECOM, "Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California," 3.4 and 5.6; NASA "Moffett Federal Airfield Construction History and Historical Significance," prepared for the California State Historic Preservation Officer (April 2013):

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Storage Depot is not defined in either report, beyond identifying its relationship with the magazine bunkers, the general qualities of the open landscape, and the historic use of the northeast corner of the airfield prior to the construction of the golf course. In response to the 2013 NASA report, SHPO concurred that the area now referred to as Naval Storage Depot contributes to the expanded historic district, but requested additional information about the character-defining features of the area, particularly the magazines.⁹ The ambiguity of the Naval Storage Depot, which is considered an essential part of the High Explosive Magazines' integrity of setting and design, requires further analysis.

5.2.2.4 Properties Requiring Further Evaluation

Based upon the information available, three properties located within the APE required additional evaluation of eligibility for listing in the NRHP to determine if they are historic properties. These properties include Building 151, the Moffett Field Golf Course, and the LMSD Campus.

In order to be eligible for listing on the NRHP, a property must be at least 50 years old and retain demonstrable historical significance under at least one of the four established NRHP criteria:

- A. Association with events that have made significant contributions to the broad patterns of history.
- B. Association with the lives of significant persons in our past.
- C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack district.
- D. That have yielded or may be likely to yield, information important in history or prehistory.

Additionally, a property must retain sufficient historic integrity, meaning the various characteristics that allow a property to convey its historical significance. These characteristics include location, design, setting, materials, workmanship, feeling, and association. A property does not necessarily need to retain all aspects of integrity; however, it must retain aspects that are most related to the criteria under which the property exhibits significance (i.e. design, materials, and workmanship under Criterion C).

⁹ SHPO letter to Keith Venter, "Section 111 Outlease for Hangar One and Moffett Federal Airfield" (June 6, 2013).

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The following provides a summary and evaluation of Building 511 and the Moffett Field Golf Course. More robust documentation, context, and analyses for each property have been included on California Department of Parks and Recreation (DPR) 523A (Primary Record) and 523B (Building, Structure, Object) forms (See Appendix B: Relevant DPR 523 Forms). All DPR 523 Forms were prepared by architectural historians Daniel Herrick, MHC, and Rebecca Riggs, MA. The following also provides additional analysis for the Naval Storage Depot, which is considered an associated feature of the contributing High Explosive Magazines, particularly related to its extent and location within the setting of the magazine bunkers.

Building 511

The property does not appear to individually exhibit historical significance under any of the criteria that would qualify for NRHP eligibility (See Appendix B: Relevant DPR 523 Forms for full evaluation).

The property is a standard building in terms of Naval design and functionality. While the nationwide P-3 Orion Anti-Submarine Mission, operated in part at MFA from 1962-1994, is identified as having national significance, buildings most associated with this mission include Hangars 1, 2, and 3, where the aircraft were housed, and maintenance occurred. Additional structures that are integrally associated with the mission include the mission administration building (Building 300; demolished) and the Communications Building (Building 656), both of which had essential functions within the P-3 Orion program at MFA. As a weapons assembly and storage facility, Building 511 had a related, support function to the mission, but this is secondary in use and was not integral to the mission. Additionally, weapons assembly facilities are typical to Naval airfields and do not rise to a level of significance in relation to the national significance of the P-3 Orion Mission. As such, it does not have a direct, significant association with the mission and does not rise to a level of significance under Criterion A.

As a typical Navy building, Building 511 does not appear to have any associations with specific individuals significant in history, and does not appear to exhibit significance under Criterion B. In terms of architecture, Building 511 is a simple prefabricated Naval structure, typical of Navy installations throughout the US. It does not appear to exhibit any distinctive typological characteristics, method of construction, nor possess high artistic values. Additionally, it does not represent the work of a master architect, and does not exhibit significance under Criterion C. Similarly, Building 511 is a relatively new and common property type and is unlikely to yield important information related to history or prehistory, and does not appear to exhibit significance under Criterion D.

Building 511 was constructed outside the period of significance of the expanded NAS Sunnyvale Historic District, which spans from 1930-1961, and does not qualify as a contributing property.

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Therefore, Building 511 is recommended not eligible for listing on the NRHP.

Moffett Field Golf Course

It does not appear that the Moffett Field Golf Course has been previously evaluated for potential eligibility for listing on the NRHP (See Appendix B: Relevant DPR 523 Forms for full evaluation).

The evaluation conducted as part of this effort utilized the NRHP significance criteria, as well as the evaluation threshold guidance included in the Department of Defense's 2008 Historic Context Statement on Military Recreational Properties. This document states that in order for a military golf course to be NRHP-eligible, it must have significant associations with:

- Large scale military build-up efforts,
- Direct, significant connections to mission operations or research and development
- Exhibits exceptional golf course design, and/or designed by a master architect.

Per the evaluation, the Moffett Field Golf Course does not appear to be individually eligible for listing on the NRHP under any of the significance criteria. The course was constructed purely as a recreational property for service personnel and support staff at MFA, first as a 9-hole course during the jet operations in 1959, and later expanded to an 18-hole course in the 1960s during the P-3 Anti-Submarine mission. Its construction is not directly related to either mission or other airfield operations, nor is it associated with a large military buildup at MFA. Therefore, the property does not appear to be significant under Criterion A.

The Moffett Field Golf Course does not appear to have any associations with significant individuals, and does not appear to be eligible under Criterion B. In terms of design, the Moffett Field Golf Course was originally designed by noteworthy golf course architect, Bob E. Baldock, and later expanded to its current 18-hole configuration by designer Robert Muir Graves. Both are responsible for designing hundreds of golf courses throughout the United States, including courses at Pebble Beach in Monterey, California. The Moffett Field Golf Course does not appear to rise to a level of significance within either designer's body of work. Additionally, the phased development of the course from 9-hole to 18-hole does not clearly embody the work of either designer, nor does it exhibit a single cohesive design that rises to a level of significance for golf course architecture. Therefore, the Moffett Field Golf Course does not appear to be significant under Criterion C. The property is unlikely to yield any significant information related to history or pre-history, and therefore is not eligible under Criterion D.

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The Moffett Field Golf Course, although constructed within the period of significance of the expanded NAS Sunnyvale Historic District (1930-1961), was not directly associated with the jet fighter mission. The expanded NAS Sunnyvale Historic District enlarged the area of the historic district to include runways and buildings at MFA associated with airway operations and significant missions. The expanded historic district encompassed the jet fighter mission (1956-1961) under the new period of significance, however the Moffett Field Golf Course is not directly associated with the significance criteria and therefore does not qualify as a contributor to the expanded NAS Sunnyvale Historic District.

Naval Storage Depot

The Navy, during World War II, developed the northeast corner of the airfield, which had previously undeveloped farm and marshlands, as the center of the munition magazines and handling operations at MFA. The Navy chose this location because it was undeveloped and had transportation access to the San Francisco Bay via the ferry channel.¹⁰ Several Igloo-type High Explosive Magazines were constructed in a linear arrangement at the eastern portion of the area, whereas the western portion featured a series of fortified ammunition loading circles organized in an arc configuration at the western portion (**Figure 8**). The spatial organization of Naval Storage Depots was dictated by a series of requirements developed by the War Department in the 1920s, which required approximately 450' of spacing between magazines, although inter-magazine distances were often dictated by the size of the magazines and the type and quantity of explosives stored therein.¹¹ However as the designs of magazines changed and became increasingly efficient and safe, distancing requirements between neighboring magazines were decreased.¹² This is reflected in the magazines constructed at MFA, which exhibit an inter-magazine distance of approximately 100'.

¹⁰ NASA, "Moffett Federal Airfield" (2013): 2.

¹¹ Geo-Marine, Inc. "Army Ammunition and Explosives Storage in the United States: 1775-1945," Special Publications No.7, prepared for the US Army Corps of Engineers Fort Worth District (2000): 50.

¹² Ibid., 54.

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Figure 8: 1948 Aerial Photograph of the Magazine Area at MFA with large arc-organized magazines on the western portion (left) and smaller, linear-organized magazines on the eastern portion (right); north is up.¹³

As MFAs operations and mission shifted during the Cold War, the need for an expansive Naval Storage Depot decreased. The large munition loading circles were replaced with smaller facilities along the arc roadway and new uses were introduced primarily through construction of the original 9-hole Moffett Field Golf Course in 1959. As described previously, the introduction of a golf course was an appropriate low-density use that was traditionally reserved for ordnance handling. However, as aerial photographs from this period demonstrate, the area surrounding the magazines continued to be separated from the golf course, which wrapped around the east and north perimeter of the High Explosive Magazines in a way that reflects the inter-magazine distances of approximately 100' (**Figure 9**). This distinction of the Naval Storage Depot surrounding the magazines becomes more pronounced over the following decade, particularly after the golf course was expanded to its 18-hole configuration in 1968. The expansion of the golf course saw much of the original munition loading area removed, save for a small portion of structures located at the site of the present-day storage yard (**Figure 10**).

¹³ UCSB Library, Historic Aerial Photograph Collection, "Flight CDF 1948, Frame 5-2-111" (May 5, 1948).

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Figure 9: 1963 Aerial Photograph of the original 9-hole configuration of the Moffett Field Golf Course at right with the existing magazines at center and the now-demolished munitions loading area at left; north is up.¹⁴

¹⁴ UCSB Library, Historic Aerial Photograph Collection, "Flight CAS_65_130, Frame 6-76" (May 1, 1965).

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Figure 10: 1968 Aerial Photograph of the 18-hole configuration of the Moffett Field Golf Course with the loading areas largely removed and the existing magazines remaining with the Naval Storage Depot in place (outlined); north is up.¹⁵

While the entirety of the northeast corner at MFA was used for munitions handling during World War II through the early 1950s, the introduction of the golf course and other uses throughout reduced the overall footprint dedicated to the High Explosive Magazines. However, open and undeveloped space surrounding these magazines were retained through the evolution of the Naval Storage Depot. Evidence shows that these areas became increasingly defined as secured areas as development encroached upon the munitions infrastructure. For the remaining High Explosive Magazines, the open spaces of the Naval Storage Depot were largely defined by the late 1950s through the separation of spaces with the golf course. This separation and the interstitial open space of the Naval Storage Depot around the magazines was created through the restriction of personnel and development of a secured perimeter, separating the munitions handling from the various airfield operations and recreational uses that were becoming increasingly common in the area. Therefore, the Naval Storage Depot that

¹⁵ UCSB Library, Historic Aerial Photograph Collection, "Flight CAS_2310 Frame 1-147" (May 2, 1968).

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exists currently around the High Explosive Magazines, which is demarcated by the perimeter security fencing, is considered the extent of the contributing landscape feature associated with the historic High Explosive Magazines. As such, it is considered a contributing landscape feature to the NRHP-eligible expanded NAS Sunnyvale Historic District for its association with mission operations at the airfield during the period of significance.

5.2.3 Stantec Desktop Survey of East Adjacent Parcels Sunnyvale, California (December 2019)

In December 2019, Stantec architectural historians and archaeologists performed a desktop survey of the area located directly east of MFA in Sunnyvale California that is included in the APE, which is entirely defined by the Lockheed Martin Missiles & Space Division (LMSD) Campus. This involved visiting the Northwest Information Center (NWIC) to find previous historic evaluations and reports specific to the area. While records for surrounding areas were found for a variety of previous studies, none were specific to the built environment properties located within this specific portion of the APE. Additional research was conducted, which involved examining and reviewing various public records, including Santa Clara County records, City of Sunnyvale planning documents, and Environmental Impact Reports that were prepared for projects in this specific area.

The northwest portion of the Lockheed Martin Missiles & Space campus, located in the eastern periphery of the APE, is a high profile and sensitive technical facility and a full evaluation and survey was not within the scope of this effort.

5.2.3.1 Lockheed Martin Missiles & Space Campus, Sunnyvale

The Lockheed Corporation was originally founded in San Francisco, California, by brothers Allan and Malcom Loughead in 1912, as the Loughead Aircraft Manufacturing Company. The company, having relocated to Burbank, California, became an important aircraft development and manufacturing company and was responsible for major developments in aviation from the 1920s through World War II. At the end of the War, Lockheed was a predominant defense contractor and was responsible for developing some of the most advanced aviation and aerospace programs for the US during the Cold War.

In 1956, the Lockheed company purchased over 400 acres of land in Sunnyvale, California. The location, considered ideal for its proximity to Stanford University and the facilities at NASA ARC, was developed for the Lockheed Missiles & Space Division (LMSD). Founded in 1955, the LMSD was contracted by the federal government to develop the US Navy's ballistic missile program, as well the US Air Force's advanced military satellite systems and advanced warning systems. Of the programs developed at

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LMSD campus, the most famous and well known include the Polaris missile and Hubble Space Telescope programs, as well as the recently declassified CORONA program, which was the first satellite surveillance program developed during the Cold War.¹⁶ To facilitate the advanced research and development and manufacturing activities at Sunnyvale, Lockheed constructed a vast campus of facilities in the area directly east of MFA. The northwest corner of this campus is located within the APE. This portion of the campus features several large facility buildings, as well as a variety of support structures and recreational facilities. The initial buildings appear to have been constructed in 1965 and were subsequently expanded over the following years, reaching its current configuration by the 1980s.

Due to the highly sensitive nature of the facility and the ongoing programs, a full survey and evaluation of the property for potential NRHP eligibility was not conducted. However, given the advanced nature and high-profile research and development that has occurred at the property, this study assumes that the property would likely be eligible for listing in the NRHP per the Advisory Council on Historic Preservation's (ACHP) guidance on applying NRHP criteria on scientific facilities, specifically as a property "associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent the broad national patterns of United States history and from which an understanding and appreciation of those patterns may be gained."¹⁷ Additionally, while the campus in its current configuration is not yet 50 years of age, the nature of the programs administered at the facilities by LMSD have the potential to be of exceptional significance and could qualify under Criteria Consideration G: Properties that have achieved significance within 50 years. As such, the following analyses of the Undertaking will consider the LMSD campus as a historic property in determining potential adverse effects. Future evaluation of the property should be conducted to fully assess the historical significance and integrity of the campus.

5.2.4 Historic Properties in the APE

The following table (**Table 1**) and map (**Figure 11**), outlines the built environment properties located within the APE, as well as the year they were constructed, their historic status and history of previous evaluations, whether the property is located within the ADI, and their status as a historic property for the purposes of Section 106 consultation.

¹⁶ The History Factory, *Innovation with Purpose: Lockheed Martin's First 100 Years* (Washington DC: Lockheed Martin Company, 2013), 121-123.

¹⁷ Advisory Council on Historic Preservation, *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities* (Washington DC: Advisory Council on Historic Preservation, 1991), 30.

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Table 1: Built Environment Properties Within the Undertaking APE & Historic Property Status

Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in ADI	Historic Property
01	Hangar 1	1931-33	<ul style="list-style-type: none"> Individually eligible to NRHP NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
02	Gymnasium/ Balloon Hangar	1931-33	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
05	Water Tower	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
10	Heat Plant	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
15	Security Station/ Fire Station and Laundry	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
16	Public Works/ Locomotive Crane Shed	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
17	Administration/ Admirals Building	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
17a	Memorial Anchor	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
18	Unmanned Aerial Vehicle Research Building/ Aerological Center	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in ADI	Historic Property
19	Industry Partners Building/ Bachelor Enlisted Quarters	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
20	Bachelor Officer Quarters	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
21	Garages/ Bachelor Officers Garage	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
22	Garages/ Bachelor Officers Garage	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
23	Carnegie Mellon University/ Dispensary	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
24	Carnegie Mellon University Storage/ Ambulance Garage	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
25	Admin. Building/ Recreation Building	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
26	Gate House	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
32	North Floodlight Tower	1934	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in ADI	Historic Property
33	South Floodlight Tower	1934	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
37	Scale House	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
40	Flagpole & Grounds	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
46	Hangar 2	1942	<ul style="list-style-type: none"> Individually eligible to NRHP NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
47	Hangar 3	1943	<ul style="list-style-type: none"> Individually eligible to NRHP NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
55	Heat Plant	1943	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
69	Inert Ammunition Storage	1943	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District Evaluated as ineligible in Section 106 consultation for the Defense Support Fuel Point Closure project; however, SHPO did not concur with these findings and continued to be treated as a historic property. 	Yes	Yes
70	Fuse & Detonator Magazine	1943	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District Includes the Naval Storage Depot, which is the 	No	Yes

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in ADI	Historic Property
			associated open space around the magazines and located within the boundaries of the existing perimeter security fencing.		
71, 72, 73, 74	High Explosive Magazines	1943	<ul style="list-style-type: none"> Identified as contributors to the potentially eligible to expanded NAS Sunnyvale Historic District Includes the Naval Storage Depot, which is the associated open space around the magazines and located within the boundaries of the existing perimeter security fencing. 	No	Yes
105	Airfield Lighting Vault	1947	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District 	No	Yes
106	Aircraft Compass Calibration Pad	1947	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District 	No	Yes
137, 138, 139, 140	Aircraft Fuel Storage Tanks	1952	<ul style="list-style-type: none"> Evaluated as ineligible in Section 106 consultation for the Defense Support Fuel Point Closure project; concurred upon by SHPO in June 2016. 	Yes	No
141	Tank Truck Filling Rack	1952	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District Evaluated as ineligible in Section 106 consultation for the Defense Support Fuel Point Closure project; 	Yes	No

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in ADI	Historic Property
			concurrent upon by SHPO in June 2016.		
143, 147	High Explosive Magazines	1951	<ul style="list-style-type: none"> Identified as contributors to the potentially eligible to expanded NAS Sunnyvale Historic District Includes the Naval Storage Depot, which is the associated open space around the magazines and located within the boundaries of the existing perimeter security fencing. 	No	Yes
158	Flight Operations Building & Tower	1954	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District 	No	Yes
329	Ultra-High Frequency/ Very High Frequency Receiver Building	1958	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District 	No	Yes
442	Ordnance Handling Pad	1956	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District 	No	Yes
454	Ultra-High Frequency/ Very High Frequency Transmission Building	19	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District 	No	Yes
511	Weapons Station	1968	<ul style="list-style-type: none"> Evaluated in Cold War Survey and found ineligible for the NRHP under Criteria Consideration G. Evaluated and recommended ineligible for 	Yes	No

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in ADI	Historic Property
			the NRHP by Stantec in 2019 in support of the current Undertaking.		
684	Ground Maintenance Storage	1984	<ul style="list-style-type: none"> Not 50 years old, does not meet the age threshold for NRHP eligibility Evaluated in Cold War Survey and found ineligible for the NRHP under Criteria Consideration G; does not exhibit exceptional significance. 	Yes	No
686	Parachute Repair Building	1984	<ul style="list-style-type: none"> Not 50 years old, does not meet the age threshold for NRHP eligibility Evaluated in Cold War Survey and found ineligible for the NRHP under Criteria Consideration G; does not exhibit exceptional significance. 	Yes	No
934	Moffett Field Golf Course Club House	1959	<ul style="list-style-type: none"> Non-contributor to NAS Sunnyvale Historic District. 	No	No
A1-11	Housing & Garages	1933	<ul style="list-style-type: none"> NRHP-listed Contributor to NAS Sunnyvale Historic District 	No	Yes
MF1000	Runway 32L/14R	1938	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District 	No	Yes
MF1001	Instrument Runway 14L/32R	1945	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District 	No	Yes
MF1002	Aircraft Parking Aprons	1945	<ul style="list-style-type: none"> Identified as contributors to the potentially eligible to 	Yes	Yes*

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in ADI	Historic Property
			expanded NAS Sunnyvale Historic District		
MF1003	High-Speed Aircraft Fueling Pits	1955	<ul style="list-style-type: none"> Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District Evaluated as ineligible in Section 106 consultation for the Defense Support Fuel Point Closure project; concurred upon by SHPO in June 2016. 	Yes	No
MF1016	Parallel & Connecting Taxiways	Ca.1946	<ul style="list-style-type: none"> Identified as contributors to the potentially eligible to expanded NAS Sunnyvale Historic District. 	No	Yes
n/a	Moffett Field Golf Course	1959, 1968	<ul style="list-style-type: none"> Evaluated and recommended ineligible for the NRHP by Stantec in 2019 in support of the current Undertaking. 	Yes	No
n/a	Naval Storage Depot	1943	<ul style="list-style-type: none"> Identified as a contributing landscape feature to the potentially eligible expanded NAS Sunnyvale Historic District Concurred up by SHPO as contributing landscape feature in 2013, but additional information requested. 	No	Yes
n/a	Alviso Salt Pond Historic Landscape	Early 20 th century	<ul style="list-style-type: none"> Identified as eligible for the NRHP by the USFWS, confirmed by USACE in 2008. 	Yes	Yes
n/a	LMSD Campus	Ca.1965	<ul style="list-style-type: none"> Unable to evaluate at this time, but being treated as NRHP-eligible for the 	No	Not Evaluated⁺

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in ADI	Historic Property
			purposes of this Section 106 consultation		

Notes:

* Only portions of the East MF 1002 are located within the identified ADI, and are associated with the BMF scope of the Undertaking. While the central tower option for the ATCC camera arrays is located in proximity to the West MF 1002, it will specifically be sited north of the apron and outside of the ADI.

+ Assumed eligible for listing in the NRHP.

5.2.4.1 Affected Historic Properties

The following section outlines the identified historic properties within the APE that have the potential to be affected by the Undertaking (**Figure 11**). This includes a summary of each historic property, including a brief history and status summary, relevant character-defining features, and relative location to the proposed Undertaking.

Of the identified built environment historic properties, only Building 69, the eastern portion of East MF1002, and a minimal area of the Alviso Salt Pond Historic Landscape are located within the ADI.

NAS Sunnyvale Historic District

As outlined in **Section 5.2.1.1**, the original NAS Sunnyvale Historic District was listed on the NRHP in 1994, and determined significant under Criteria A and C for its associations with the development of US Naval aviation prior to World War II, and for its cohesive collection of Spanish Colonial Revival style buildings and the engineering associated with the hangars. In 2013, the expanded NAS Sunnyvale Historic District was identified and determined eligible for listing on the NRHP with an expanded period of significance of 1930-1961, which included the 1950s jet operations of the early Cold War. The expanded district included large swaths of the MFA property that were left out of the original NRHP-listed district, primarily the central airfield and the eastside portion of the airfield, which includes the munitions handling network and the collections of High Explosive Magazines set within the associated open space of the secured Naval Storage Depot at the northeast corner of the property.

All contributing elements of the NAS Sunnyvale Historic District are located within the APE. This includes all of the contributing airfield features – two runways (MF 1000, MF1001), aircraft parking aprons (MF 1002) on the east and west sides of the airfield,

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various taxiways (MF 1016), and other features (Buildings 106 and 442) – which are primarily defined by their expansive, flat paved surfaces with axial siting and open setting that creates a buffer of open space around each feature. Also included are the supportive airfield operations buildings (Buildings 105, 329, and 454), which are typically simple, prefabricated buildings that house the communication and electrical equipment for the airfield instrumentation, save for the Flight Operations Building & Tower (Building 158), which is a larger two-story building with Mid-Century architectural detailing and prominent control tower.

The entirety of the original Shenandoah Plaza portion on the westside of the airfield is also included in the APE, which is comprised of the original 1930s buildings at MFA. However, of the original Shenandoah Plaza, only Hangar 1 is located within the identified ADI.

On the eastside of the airfield, the entirety of the Hangar 2/3 precinct is included within the APE, as are the surrounding areas associated with the munitions handling network, which includes the concrete magazines (Buildings 70-74, 143, 147) set within the center of the Naval Storage Depot, as well as the simple, inert ammunition storage building (Building 69), located north of Hangars 2 and 3.

Of the various identified character-defining features, the following are those that are most relevant within the context of the APE and the Undertaking:¹⁸

- Flat topography with broad open views across the aviation areas.
- Expansive, linear system of airfield runway features, including the two parallel runways, associated taxiway network, and the compass calibration pad.
- Long views along the airfield towards San Francisco Bay and the salt ponds
- Collection of historic aviation facilities along the perimeter of the airfield. This includes both contributing and non-contributing elements, as the general massing and appearance solidify the spatial organization and character of the airfield.
- Visual dominance of Hangar 1 from throughout the airfield.
- Views to Hangars 2 and 3, which frame the eastside of the airfield and spatially balance Hangar 1 to the west. The three hangars are of primary significance, and their massing and appearance support the historic character and integrity of the airfield.
- Ammunition storage and handling features at the northeast corner of the airfield, which include the regularly spaced bunker-like magazines and simple storage facilities, all set within the open space of the Naval Storage Depot.
- Structures associated with aviation lighting, including the two distinct Hangar 1 floodlight towers and simple, utilitarian operations shelters.

¹⁸ AECOM, "Historic Property Survey Report," 5.4-5.5;

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- Collective design of buildings and structures and the aesthetics of “futuristic grandeur.”
- Ongoing aviation use.

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Hangar 1

Hangar 1 is a large, steel framed dirigible hangar located on the westside of MFA. Constructed between 1932 and 1933, Hangar 1 was designed to house the USS *Macon*, a large dirigible aircraft that operated at MFA until it crashed into the Pacific Ocean in 1935. Over the following decades, it continued to house aircraft and support the various airfield missions. The Streamline Moderne inspired structure continues to be the most prominent and iconic historic structure at MFA (**Photograph 14**).



Photograph 14: North and east elevations of Hangar 1, looking south.

The structure has been determined individually eligible for listing on the NRHP for significance associated with Naval history and for its unique engineering and architectural design. In 1994, Hangar 1, as well as the adjacent Moderne style Floodlight Towers (Buildings 32 and 33), was listed on the NRHP as a contributor to the NAS Sunnyvale Historic District.

The most significant character-defining features of the structure include its size and massing, Streamline Moderne style, the “clam shell” doors, the steel exoskeleton structural system, the visual prominence within MFA, and its relationship to the entirety of the sight, particularly to the adjacent Buildings 32 and 33, as well as Hangars 2 and 3, located on the opposite side of the airfield.¹⁹ When it was first identified, the original

¹⁹ Page & Turnbull, Inc. “Hangar One, Moffett Field, California – Re-Use Guidelines,” prepared for NASA/ Ames Research Center (August 24, 2001), 3-4.

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cladding was considered a character-defining feature, but was removed in the late 2000s; however, efforts to rehabilitate the structure are underway.

Hangars 2 & 3 – Buildings 46 & 47

Hangars 2 and 3 are large, wood framed dirigible hangars located on the eastside of the Airfield. Constructed between 1942 and 1943, Hangars 2 and 3 are nearly identical hangars based upon a standardized plan that was utilized for similar hangars located at a handful of other airfields that were in operation during World War II (**Photograph 15**). Hangar 2, located directly east adjacent to the airfield, was constructed first, whereas Hangar 3 was constructed second. Both were designed to facilitate the LTA coastal defense program at MFA during World War II, and both was used to house fixed wing aircraft that operated out of MFA over the following decades.

In 1988, both hangars were determined individually eligible for listing on the NRHP for significance associated with events during World War II, and for their overall engineering and design. In 1994, Hangars 2 and 3 were each listed on the NRHP as contributors to the NAS Sunnyvale Historic District as excellent examples of military engineering and design during World War II. In 2013, Hangars 2 and 3 was also identified as contributors to the NRHP-eligible expanded NAS Sunnyvale Historic District, which also includes the airfield features at MFA that were significant to the various missions that took place between 1933-1961.

The most significant character-defining features of both hangars include the distinctively large massing; parabolic roof with corrugated aluminum siding; massive sliding hangar doors with supporting concrete towers, wood box beams, and adjoining clamshell roof; the flanking brick masonry sheds; wood frame truss construction set on repeating concrete bents; expansive interior concrete decking; and the vast open interior volumes. Additionally, the two structures are unique for the parallel siting and nearly identical composition, which creates the paired hangars appearance.

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Photograph 15: North and west elevations of Hangar 2 (right) and Hangar 3 (left).²⁰

Building 69

Building 69 was constructed in 1943 as an inert munition's storage building, located on the northeastern periphery of the airfield (**Photograph 16**). The simple concrete building was used to store inert munitions following the removal of them from aircraft parked on the adjacent parking apron. It was part of the broader munition's operation at the airfield, which included the magazine storage bunkers located to the northeast.

Character-defining features include the simple footprint and concrete construction, gable roof, limited fenestration, symmetrical composition, and concrete loading platform located outside the primary entrance with paired metal doors. The spatial organization with the airfield, particularly with East MF1002 and the High Explosive ammunition magazines is an important element in the building's setting and associations within the

²⁰ Photograph accessed from NASA Ames Research Center, Historic Preservation Office, "Hangar 1 – Gallery, Photo #12," accessed May 15, 2020 https://historicproperties.arc.nasa.gov/hangar1/gallery_12.html.

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broader ammunition handling network. Building 69 is identified as a contributor within the NRHP-eligible expanded boundaries of the NAS Sunnyvale Historic District.



Photograph 16: North and west elevations of Building 69, looking southeast.

MF 1002 – Aircraft Parking Apron

The East MF1002 is an expansive, paved surface located on the eastside of the airfield extending along the East Parallel Taxiway from the CAANG property northwards and surrounding Hangars 2 and 3 (**Photograph 17**). Originally constructed in 1942 as a location for aircraft parking, the Navy expanded East MF1002 to accommodate increased aircraft operations at MFA with the southern apron expanded in the mid-1950s and the northern portion expanded ca.1980.

The West MF 1002 is a similar airfield feature located on the west side of the airfield, directly east adjacent to Hangar 1 and the original Shenandoah Plaza portion of the airfield (Photograph 18). As with East MF 1002, West MF 1002 is an expansive, paved surface that was initially constructed as an aircraft apron in 1942 to facilitate the parking and maintenance of aircraft. The apron was later expanded ca.1950 to its current configuration.

The predominant character-defining feature of East and West MF1002 is the flat, paved surface organized in a repeating, squared grid pattern throughout. At the center of many of these repeating squares are embedded aircraft tie downs. While the entirety of the Parking Apron features this repeating pattern, character-defining spaces are those that

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were constructed within the 1933-1961 period of significance of the expanded NAS Sunnyvale Historic District. For East MF 1002, this includes the areas directly surrounding the hangars and to the south. The north ca.1980 portion, which is separated from the character-defining space of East MF1002 by an asphalt paved road, is considered non-character-defining because it was constructed outside the period of significance and is therefore not historic.



Photograph 17: North portion of East MF1002 exhibiting typical conditions; note Hangar 3 north façade at right.

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Photograph 18: North portion of West MF1002 exhibiting typical conditions, looking north towards prospective location of the potential center ATCC camera array tower.

Airfield Features (MF1000, MF1001, MF1016, Building 442)

The airfield features include the runways, taxiways, and other paved elements that compose the airfield. These are elements that were constructed over various periods, starting as early as 1938 and expanded greatly during World War II and the Cold War-era, specifically the 1950s.

The predominant character-defining features of the airfield features is their flat, paved, and linear nature, as well as their axial orientation and connections that form the broader airfield network. MF1000 and MF1001 as the two runways are the primary features of the airfield, and their parallel axial orientation lend to creating significant view corridors through the NAS Sunnyvale Historic District, particularly the visual connection towards the north and south ends of the airfield. The supporting taxiways of MF1016 are often organized parallel or perpendicular to each other, which facilitate the movement of aircraft leaving and entering the airfield. Collectively, these elements create the vast open space of the airfield, which is center to the district (**Photograph 19**). They all feature broad buffers of open space created by the interstitial sod spaces, as well as the peripheral open space between the surrounding airfield buildings, support structures, and aircraft parking aprons.

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Photograph 19: Airfield at MFA, looking southwest across the east parallel taxiways and runways.

Specific to Building 442, which was constructed as the ordnance handling pad in 1956, the airfield features is defined by its lollipop configuration with a circular concrete pad extending perpendicularly east from the east parallel taxiway. It is where munitions were loaded on to aircraft prior to take off and is considered both part of the airfield infrastructures, as well as part of the larger part of the munitions handling network. In addition to its flat, circular, paved nature, the feature is defined by the open space immediately surrounding it that serves as a buffer (**Photograph 20**).

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Photograph 20: Building 442, looking northeast across the circular ordnance handling pad.

Building 158

Building 158 is located on the westside of the airfield, south of Hangar 1 and adjacent to West MF 1002, acting as a primary circulation point between the landside portions at MFA with the controlled airfield. It was constructed in 1954 as the Air Traffic Operations and Control Tower Building, and continues to operate in this capacity.

Character-defining features of Building 158 include its siting at MFA between the airfield and landside portions of the property, as well as its parallel orientation with the airfield, irregular rectilinear layout, and one-to-two story height with the integrated control tower. Overall, the building has a Mid-Century Modern aesthetic. It has a primarily flat roof profile with overhanging eaves, stucco veneer, and simple metal fenestration in the form of a large, glazed entrance and repeating windows throughout. The tower features a glazed octagonal control room, which provides uninterrupted views across the airfield.

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Photograph 21: Primary (west) elevation of Building 158 with Traffic Control tower at center-right.²¹

High Explosive Ammunition Magazines (Buildings 70-74, 143 & 147)

The High Explosive Ammunition Magazines are a collection of linearly oriented and regularly spaced Igloo type magazine bunkers located at the northeast corner of MFA (**Photograph 22**). Initially, constructed in 1942, Buildings 70-64 were part of the broader ammunition handling network at Moffett Field, which involved transportation from the magazines to the airfield, where they were loaded on to aircraft at East MF1002. Once used, inert ammunition was stored in Building 69, located northeast of East MF1002. In the 1950s, the ammunition network was expanded with the construction of new magazines of Building 143 and 147, as well as the Building 442. All of the magazines were purposely arranged and set within open space to create a Naval Storage Depot that is separated from other uses in the vicinity. Around 1968, several munition loading circles located on the west portion of the northeast corner, all of which were arranged in an arc, were removed and the area was developed as part of the Moffett Field Golf Course expansion to its 18-hole configuration.

²¹ Photograph accessed from NASA Ames Research Center, Historic Preservation Office, "Hangar 1 – Gallery, Photo #19," accessed May 15, 2020, https://historicproperties.arc.nasa.gov/hangar1/gallery_19.html

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Character-defining features of the Igloo type ammunition magazines include circular layouts with a large metal door leading inside the bunker and an adjacent concrete blast wall. The two elements of are semi-circular, which together create a bisected circular footprint, and are largely covered in rock and earth that create a mound appearance. The linear, regularly spaced arrangement of buildings set within a large open space known as the Naval Storage Depot, which is demarcated by a chain link fence that surrounds the perimeter of the zone and extends a distance of 100' from the closest magazine. These magazines are identified as contributors within the NRHP-eligible expanded boundaries of the NAS Sunnyvale Historic District.



Photograph 22: Buildings 73 and 72 with typical High Explosive Magazine design and surrounding open space of the Naval Storage Depot behind the chain link fence, looking southeast.

Naval Storage Depot

The Naval Storage Depot is defined as the open and undeveloped space surrounding the High Explosive Magazines. Originally, the majority of the northeast area of MFA was used for this purpose; however, following World War II and the Korean War, much of the area was repurposed as the mission at MFA changed, airfield operations expanded, and new uses identified. In 1959, the Moffett Field Golf Course was constructed adjacent to the High Explosive Magazines, and the expansion of the course in 1968 led to the construction of the golf course around the Naval Storage Depot. This neighboring use was considered appropriate as it would retain a limited low-density development of the area surrounding the magazines. However, as development continued in the area, the

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Naval Storage Depot became increasingly defined through the installation of perimeter security fencing, which has continued to define the area around the magazine structures.

The Naval Storage Depot and its undeveloped open space is an associated feature of the contributing High Explosive Magazines and the larger munitions handling network located throughout the northeast corner of the expanded NAS Sunnyvale Historic District. Its character defining features include the low-density quality of the landscape with the magazines located near the center with the established secure perimeter (**Photograph 22**). As such, the Naval Storage Depot is an important part of the design and setting of the expanded NAS Sunnyvale Historic District, but more specifically, the collection of the High Explosive Magazines.

Alviso Salt Pond Historic Landscape

The Alviso Salt Pond Historic Landscape is defined by an extensive network of earthen levees that extends across over 9,000 acres in the south San Francisco Bay.

Constructed in the early 20th century in the production of salt, the Alviso Salt Ponds were found to be eligible in 2008 for listing on the NRHP as a historic district under Criterion A at the local level for significance associated with the development of the solar salt industry. The extensive salt ponds and levee network continue to be a defining element of the south San Francisco Bay area.

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Photograph 23: Aerial photograph of the eastern portion of the Alviso Salt Ponds, looking southwest with MFA near top right.²²

6.0 Assessment of Effects

Per 36 CFR 800.5(a)(1) of the NHPA, the Criteria of Adverse Effects are applied to assess potential effects of the Undertaking on historic properties located within the associated APE:

(1) Criteria of adverse effect. An Adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

Pursuant to 36 CFR 800.5(a)(1), adverse effects occur when an undertaking alters a historic property, either directly or indirectly, to a point where the historic integrity is

²² "Alviso Salt Ponds Aerial," Wikimedia Commons, accessed April 12, 2020, https://commons.wikimedia.org/wiki/File:Alviso_salt_ponds_aerial.jpg

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compromised, and the historic property no longer qualifies for listing on the NRHP. Examples of adverse effects on historic properties, per 36 CFR 80.5(a)(2) include the following:

- i) Physical Destruction of or damage to all or part of the property.
- ii) Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.
- iii) Removal of the property from its historic location.
- iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.
- v) Introduction of visual atmospheric, or audible elements that diminish the integrity of the property's historic features.
- vi) Neglect of a property which causes deterioration except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.
- vii) Transfer, lease, or sale of a property out of Federal ownership or control without adequate legally enforceable restrictions or conditions to ensure long-term preservation of the property's significance.

The following analysis evaluates each scope component for potential effects on historic properties using the above example criteria and Secretary of the Interior's Standards for Rehabilitation in order to fully conceptualize the potential for adverse effects that may result indirectly from the Undertaking. Given the breadth of the proposed Undertaking and its components, a summary of any and all adverse effects is included in **Section 6.7**.

6.1 Bus Maintenance Facility

The proposed BMF of the Undertaking involves the maintenance and operations building, bus washing facility, reconfiguration of the bus surface parking facility, and the construction of solar panel array canopies. This portion of the Undertaking is located entirely within the boundaries of the expanded NAS Sunnyvale Historic District and is adjacent to many contributing properties.

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6.1.1 Criterion i

Physical Destruction of or damage to all or part of the property.

In terms of archaeological resources, there are no known sites located in the ADI associated with the BMF. Additionally, the majority of this portion of the ADI overlaps with areas identified as having low archaeological sensitivity, except for a small portion at the northeast corner of the BMF project area, which corresponds with an area identified as having heightened historic-era archaeological sensitivity. While there is some overlap with this sensitivity area, the location has been heavily disturbed and subject to numerous investigations, none of which have uncovered any evidence of archaeological resources. Despite the low likelihood for any archaeological sites to be present in the area associated with the BMF, the potential for any unknown sites to be extant in the ADI associated with the BMF is recognized. Therefore, it is recommended that a monitor that meets the SOI Qualifications for archaeology be onsite when ground disturbing activities overlap with, or in the vicinity of, identified areas of heightened archaeological sensitivity. Therefore, the BMF scope of the Undertaking would not result in adverse effects to archaeological historic properties under this example.

For built environment resources, the BMF scope of the Undertaking includes a reorganization of the space located at the existing surface bus parking, located directly between Macon and Zook roads to the east and the airfield security fencing located to the east. In order to optimize vehicle circulation efficiently and safely throughout the proposed bus parking lot and facility program, Building 69 must be removed from its existing location at the bus parking lot. As a contributing building to the expanded NAS Sunnyvale Historic District with significance under Criterion A for its associations with the missions at the airfield from when it was constructed in 1943 to 1961, relocating Building 69 would result in a significant loss of integrity, particularly through its disrupted spatial organization. Additionally, the feasibility of both physically relocating the concrete munitions structure and finding a historically appropriate receiver site in an area that has multiple environmental constraints is unlikely. As such, demolition of Building 69 is likely, which result in a complete loss of all aspects of integrity and disqualify Building 69 for being eligible for listing on the NRHP as a contributor to the NAS Sunnyvale Historic District. Therefore, demolition of Building 69 will result in an adverse effect.

6.1.2 Criterion ii

Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.

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Rehabilitation Standard 1

A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships.

The BMF scope of the Undertaking would not result in changes to the current use of any historic property, including aviation and ongoing operations within the NAS Sunnyvale Historic District. The BMF project area is already being utilized for surface parking, maintenance, and other operations related to the existing bus fleet. The introduction of the new BMF facilities will perpetuate this use. However, while the use is being retained, there are contributors to the NAS Sunnyvale Historic District that will be affected.

First, Building 69 will be removed to allow for the necessary improvements to increase efficiency and safety of the bus circulation through the property. The removal of the building will include the physical removal of a contributing property, as well as disrupting Building 69's spatial relationship within the eastside of MFA, particularly with other elements of the former munitions handling network, which includes the airfield features and the former magazines and Naval Storage Depot.

Second, in order to facilitate the electrification of the bus fleet to meet emission goals, new solar panel array canopies are being constructed throughout the surface parking area, including the portion that overlaps with East MF1002. The canopies will be notable intervention around East MF1002, which is characterized by its flat, open, and expansive paved surface. While the canopy will be limited to a small portion of the expansive East MF1002, the structures will alter the character of the apron, particularly in the vicinity of Hangars 2 and 3, the setting of which is partially characterized by the open paved surface that surrounds it.

Therefore, the BMF scope of the Undertaking will not adhere to Rehabilitation Standard 1.

Rehabilitation Standard 2

The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

Maintenance & Operations Building

The proposed Maintenance & Operations Building will not involve the removal of any distinctive materials or alterations of features, spaces, and spatial relationships that characterize a historic property. The building will be sited on a portion of the existing, non-contributing bus surface parking lot at the periphery of East MF1002 and the airfield. This placement, coupled with its relatively restrained height and simple

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massing, will not visually disrupt the significant view corridors of the expanded NAS Sunnyvale Historic District across and throughout the airfield, nor will it encroach upon the character-defining flat, open topography of the west-adjacent East MF 1002, which also serves as an integral aspect of setting to Hangar 2, Hangar 3, and other historic properties on the eastside of the airfield.

Therefore, the Maintenance & Operations building will adhere to Rehabilitation Standard 2.

Bus Washing Building

The Bus Washing Building will be a simple, rectilinear building located at the periphery of the eastside portion of the airfield. Similar to the Maintenance & Operations Building, this building will be placed on the non-contributing existing bus parking lot, which will not alter any distinctive features or materials associated with East MF1002, or any other historic properties. This placement well outside the significant view corridors of the expanded NAS Sunnyvale Historic District, plus its restrained height and simple massing, will have no physical disruption on the spatial organization of any historic properties in the vicinity.

Therefore, the Bus Washing Building scope will adhere to Rehabilitation Standard 2.

Bus Parking Lot

The bus surface parking lot is currently being utilized for bus parking, and the expansion and reconfiguration of this continued use will not be a departure from the existing conditions. While the expansion of the bus parking associated with this reconfiguration will expand on to East MF1002, the property will largely be retained in its existing condition. East MF1002 was originally constructed for the purposes of parking aircraft. While it will be repurposed to serve buses, the slight variation in use will not result in a broad departure that will affect the setting of the property, nor any of the other historic properties within the expanded NAS Sunnyvale Historic District.

The primary alterations associated with this portion will be cosmetic through painting of parking striping and traffic circulation lines. While this will be a new visual element, this will not disrupt the overall character-defining gridded paved quality of the historic property and will be limited to the eastern most area. Subsequently, no other historic property will be indirectly affected by this reconfiguration of the parking spaces.

However, as part of the reconfiguration, Building 69 will be removed from its existing location. The former munition storage building, Building 69 is part of the broader munitions handling network that is situated on the eastside of MFA and is inherently linked to the High Explosive Magazines, Building 442, and East MF1002, all of which are historic properties. By removing Building 69 to accommodate the reconfigured

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surface parking, this will disrupt the spatial organization of these historic properties and result in diminished historical integrity for the broader munitions network. Therefore, while most of the of the surface parking reconfiguration will not visually disrupt East MF1002 and other properties through the retention of the paved, flat surface, the removal of Building 69 will alter the historical spatial organization and setting that contributes to these properties, thus negatively impacting the other elements of the munitions network, including Buildings 70-74, 143 and 147, and the ordnance handling pad (Building 442).

Therefore, the bus parking lot scope of the Undertaking does not adhere to Rehabilitation Standard 2.

Solar Panel Array Canopies & Bus Charging

The proposed solar panel array canopies are proposed to extend over most of the proposed bus surface parking, including the portions that will extend into the eastern portion of East MF1002. The introduction of these large canopy systems, which will be constructed to an approximate height of 18', will disrupt the flat, expansive nature of East MF1002 at this location, resulting in diminished integrity of design, setting, feeling, and association. Additionally, the character-defining flat and open nature of East MF1002 is an integral element to the spatial organization of the Eastside Airfield, particularly in the setting of Hangar 2, Hangar 3, and the contributing properties included in the ammunition handling network, such as the magazines and ordnance handling pad. The introduction of the solar panel array canopies will visually disrupt the spatial organization of these elements also, resulting in diminished integrity of design, setting, feeling, and association.

Therefore, the Solar Panel Canopies & Bus Charging does not adhere to Rehabilitation Standard 2.

Rehabilitation Standard 3

Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, will not be undertaken.

The BMF scope of the Undertaking will not create a false sense of historical development through the addition of conjectural features or other historical materials. All elements proposed as part of the scope will be clearly contemporary and differentiated from the contributing elements of the NAS Sunnyvale Historic District. Therefore, the BMF scope of the Undertaking will adhere to Rehabilitation Standard 3.

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Rehabilitation Standard 4

Changes to a property that have acquired historic significance in their own right will be retained and preserved.

The BMF scope of the Undertaking will not affect any portion of a property that has acquired significance in their own right. The project area associated with the BMF and immediate surroundings have been extensively studied, including recent evaluations of the former fueling infrastructure, Golf Course, and Building 934, none of which qualify as historic properties. Therefore, the BMF scope of the Undertaking will adhere to Rehabilitation Standard 4.

Rehabilitation Standard 5

Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

As described previously, the BMF scope is predominantly centered on the existing paved surface lot, located northeast of East MF1002 and south of Building 69. This is where the maintenance and operations and bus washing buildings will be located; the construction of these buildings will not directly alter the historic paved surface associated with the property. The largest scope component at East MF1002 involves the utilization of the existing paved surface for expanded bus parking. Alterations associated with this involve the painting of parking and circulation striping, which is purely cosmetic and will not physically alter the gridded paved surface that defines East MF1002. However, the scope does call for the physical removal of Building 69, which would result in the loss of all distinctive features and finishes of this structure.

In Phase 2 of the BMF scope, the existing bus shelters, specifically designed as temporary, will be removed without damaging the existing paved surface of the apron, and their removal will not directly alter East MF1002. Phase 2 also includes installation of the solar panel canopy arrays, which will be supported by regularly spaced metal posts installed at locations across the entirety of the bus parking lot, as well as the installation of 330 electric charging stations for the future bus fleet. While these elements will be installed over a large area at the eastside of the airfield, this work does include the easternmost portions of East MF1002. While this portion of the East MF1002 will undergo extensive alterations, large portions of the feature to the south, north, and west will remain in their existing condition and continue to contribute to the broader NAS Sunnyvale Historic District, thus remaining eligible for listing on the NRHP. The amount of disturbance required to construct these elements is still being determined as part of the design process, but it will likely result in some damage to the character-defining pavement of East MF1002.

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Therefore, the BMF scope of the Undertaking will not adhere to Rehabilitation Standard 5.

Rehabilitation Standard 6

Deteriorated historic features will be repaired rather than replaced. Where the severity of the deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.

The BMF scope of the Undertaking does not involve the treatment of any deteriorated features belonging to a historic property and, therefore, will adhere to Rehabilitation Standard 6.

Rehabilitation Standard 7

Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

The BMF scope of the Undertaking will not result in the cleaning of any historic properties. As such, no chemical or physical treatments to historic materials will be used in the context of this standard. Therefore, the BMF scope will adhere to Rehabilitation Standard 7.

Rehabilitation Standard 8

Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

As described previously, there are no known archaeological resources in the ADI associated with the BMF scope of the Undertaking. The majority of the BMF is located in an area identified as having low archaeological sensitivity, except for a portion of the northeast area of the project area, which is identified as having heightened historic-era archaeological sensitivity. Although this area is extensively disturbed and previously surveyed with no evidence of cultural materials or sites, an SOI Qualified archaeologist will be present during construction activities in the areas that overlap with, and are adjacent to, the identified area of archaeological sensitivity. Therefore, the BMF scope of the Undertaking will adhere to Rehabilitation Standard 8.

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Rehabilitation Standard 9

New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the historic integrity of the property and its environment.

Maintenance & Operations Building

The design of the Maintenance and Operations Building, while still under development, will be both differentiated and compatible within the context of the NAS Sunnyvale Historic District. First, the proposed building will be contemporary in design and construction and will not create a false sense of history and historical development in the setting of the district. At the same time, the simple and utilitarian composition of the building's design will reflect upon several character-defining features found consistently throughout the historic district. Second, the building will have a relatively restrained height, which will not visually detract from the monumental prominence of Hangars 1, 2, and 3 within the setting of the historic district. The proposed building will also feature a simple rectangular plan, massing, and composition that reflects upon these structures and other historic properties found throughout the historic district. The Maintenance & Operations Building be oriented parallel to Hangars 2 and 3, which will be consistent with the existing spatial organization of these structures, as well as the contributing airfield infrastructure, such as runways and taxiways.

In terms of materials, the maintenance and operations building will likely feature an industrial material palette of concrete and metal panels. This is directly reflecting construction materials of nearby Hangars 2 and 3, as well as other historic properties within the APE, which feature various industrial materials as cladding, including corrugated sheet metal, insulated panels, and concrete.

Overall, the preliminary design of the Maintenance & Operations Building appears to adhere to Rehabilitation Standard 9. Where there are currently unknowns about the design, the design approach outlined in **Section 2.2** will guide the design team to create a design that is both compatible and differentiated from the NAS Sunnyvale Historic District and its contributors. Therefore, the Maintenance & Operations Building will adhere to Rehabilitation Standard 9.

Bus Washing Building

The design of the simple, single-story building will be both differentiated and compatible within the setting of the expanded NAS Sunnyvale Historic District. The building will be

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contemporary and will not create a false sense of history, while also exhibiting a utilitarian aesthetic, which is consistent throughout MFA. The building will reflect common elements of the district, including a simple rectilinear massing and layout, as well as an industrial material palette of concrete with metal fenestration. The building will also be short in height, particularly in relation to the monumental hangars, which are the most prominent contributors within the district. The bus washing building will also reflect upon the hangars in a complimentary sense by retaining a site orientation that is parallel, thus reflecting upon the organization of the primary airfield features in turn, and will feature an open pass through at the north and south elevations, which is similar to the openings at both Hangar 2 and 3.

Overall, the preliminary design of the Bus Washing Building appears to adhere to Rehabilitation Standard 9. Where there are currently unknowns about the design, the design approach outlined in **Section 2.2** will guide the design team to create a design that is both compatible and differentiated from the NAS Sunnyvale Historic District and its contributors. Therefore, the Bus Washing Building will adhere to Rehabilitation Standard 9.

Bus Parking Lot

As described above, the majority of the bus parking lot improvements will occur at noncontributing areas of the existing parking lot, although some improvements will extend over the character-defining paved surface of East MF1002. However, this will be primarily cosmetic with the repainting of parking and traffic circulation lines, leaving the materials in their existing condition. These alterations, which will clearly cater to bus traffic, will be a clearly contemporary intervention and will not create a false sense of history, while retaining the historic character of East MF1002 and its associations with aircraft parking and maintenance.

However, the reconfiguration of the Bus Parking Lot will require the removal of the contributing Building 69, which will in turn alter the significant spatial relationships of the surrounding historic properties on the Eastside of the airfield.

Therefore, the Bus Parking Lot scope does not adhere to Rehabilitation Standard 9.

Solar Panel Array Canopies & Bus Charging

The proposed solar panel array canopies and bus charging scope involves the installation of multiple arrays of solar panel canopies over the bus parking lot. These elements will clearly be contemporary additions to the property, which will not create a false sense of historical development at MFA. At the same time, they will exhibit a utilitarian and technological aesthetic that will be consistent with the established vocabulary of the expanded NAS Sunnyvale Historic District and its contributors.

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Despite this balance of compatibility and differentiation, the placement of the solar panel canopies on East MF1002 will disrupt the character-defining flat and expansive paved surface of the property. This will diminish the historic character and integrity of East MF1002, and greatly alter the spatial relationship with the surrounding historic properties of Hangar 2, Hangar 3, and the ammunition handling network.

Therefore, the solar panel array canopies and bus charging scope does not adhere to Rehabilitation Standard 9.

Rehabilitation Standard 10

New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired

Maintenance & Operations Building

The Maintenance & Operations Building will be constructed on the non-contributing asphalt bus parking lot at the eastern side of MFA. If removed in the future, there will be no impairment to the essential forms and integrity of any historic property. Therefore, the Maintenance & Operations Building scope will adhere to Rehabilitation Standard 10.

Bus Washing Building

The Bus Washing building will be constructed on the non-contributing asphalt bus parking lot at the eastern side of MFA. If removed in the future, there will be no impairment to the essential forms and integrity of any historic property. Therefore, the Bus Washing Building scope will adhere to Rehabilitation Standard 10.

Bus Parking Lot

At the portions of the proposed bus parking lot improvements that extend onto East MF1002, the parking and traffic circulation lines could easily be removed from the historic painting, reverting it to its existing condition leaving the character-defining pavement with its essential form and integrity. However, the removal of Building 69 to accommodate the reconfiguration of the bus parking lot is non-reversible and, therefore, does not adhere to Rehabilitation Standard 10.

Solar Panel Array Canopies & Bus Charging

Of the BMF scope components, the solar panel array canopies and bus charging scope Charging are the most invasive components. While some of the canopy arrays and charging stations will be constructed on non-contributing areas of asphalt, some will be constructed on the character-defining gridded paved surface of East MF1002, which will

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both alter the materials and finishes of the property, as well as the significant spatial relationship between it and other historic properties in the vicinity, namely Hangar 2, Hangar 3, and the various contributors of the ammunition handling network. While the removal of these canopies and bus charging stations would restore the significant spatial relationships between East MF1002 and these other historic properties, repairs to the paved apron would be required. However, these repairs could be in-kind to restore East MF1002 to reflect its existing condition.

Therefore, the solar panel array canopies and bus charging scope will adhere to Rehabilitation Standard 10.

6.1.3 Criterion iii

Removal of the property from its historic location.

As described above, the BMF scope of the Undertaking, specifically the necessary reconfiguration of the bus surface parking lot, will result in the removal of Building 69, likely through demolition. The removal of Building 69, which is eligible for listing on the NRHP as a contributor to the NAS Sunnyvale Historic District, would result in an adverse effect under this example.

6.1.4 Criterion iv

Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.

As described in the analysis above, many of the features associated with the BMF program of the Undertaking, specifically the Maintenance & Operations and Bus Washing buildings, will promote a compatible use at the eastside portion of the airfield through the parking and maintenance of vehicles, albeit buses rather than aircrafts. While these scope elements will not alter any physical features or broader character of the expanded NAS Sunnyvale Historic District or its contributors, the proposed reconfiguration of the bus parking lot requires the removal of the contributing Building 69. This will have resounding alterations on this historic property itself, as well as the integrity of associated historic properties at the eastside of the airfield, namely the High Explosive Magazines and other elements of the munitions handling network. The solar panel array canopies and bus charging scope program will alter the character-defining expansive, open paved surface of East MF1002, diminishing the property's historic integrity. In turn, the diminished character of East MF1002 will disrupt the spatial relationships and integrity of design and setting for many of the surrounding historic properties, including Hangar 2, Hangar 3, and the High Explosive Magazines, and other historic properties.

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Therefore, bus parking lot and the solar panel array canopies and bus charging scope will cause an adverse effect under this example.

6.1.5 Criterion v

Introduction of visual atmospheric, or audible elements that diminish the integrity of the property's historic features.

Audible and atmospheric alterations will be predominantly related to construction activities for the BMF. This will be temporary, and conditions will be comparable to the existing following the completion of the Undertaking.

As demonstrated above, the placement and preliminary designs of the Maintenance & Operations and Bus Washing buildings will not visually diminish the integrity of the adjacent historic property's historic features, specifically the character-defining open, expansive paved surface of East MF1002, or the monumentality of Hangars 2 and 3 within the setting of the expanded NAS Sunnyvale Historic District.

The bus parking lot reconfiguration scope is primarily defined by simple, cosmetic alterations at East MF1002 through the painting of parking and traffic circulation striping, which will not visually detract from, nor diminish the integrity of, the historic property's character-defining open paved surface. However, the removal of Building 69 as part of the reconfiguration will greatly diminish its integrity, as well as the integrity of design and setting for other historic properties, as discussed throughout this analysis.

Similarly, the solar panel array canopies and bus charging scope will visually disrupt the character-defining open, paved surface of East MF1002, resulting in diminished integrity of design, setting, materials, workmanship, and feeling. In turn, the alterations to East MF1002 from the canopies will disrupt the spatial relationship between portions of the apron with many of the other historic properties at the eastside of the airfield, particularly Hangars 2 and 3, diminishing the integrity of setting and design.

Therefore, bus parking lot and the solar panel array canopies and bus charging scope will cause an adverse effect under this example.

6.1.6 Criterion vi

Neglect of a property which causes deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian Tribe or Native Hawaiian Organization

The BMF scope of the Undertaking would not involve the neglect of a property that causes its deterioration and, therefore, would not cause an adverse effect to historic properties under this example.

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6.1.7 Criterion vii

Transfer, lease, or sale of a property out of Federal ownership or control without adequate legally enforceable restriction or conditions to ensure long-term preservation of the property's significance.

The BMF scope of the Undertaking would not involve the transfer, lease, or sale of a property out of Federal ownership or control and, therefore, would not cause an adverse effect to historic properties under this example.

6.2 Private Hangar Complex

The proposed private hangar complex program on the Undertaking includes the construction of four new hangars along the northeastern periphery of the airfield and associated site upgrades, including the construction of a new aircraft apron at the location of MF1003 and the addition of associated automobile surface parking alongside Zook Road. The private hangar complex is located entirely within the boundaries of the expanded NAS Sunnyvale Historic District.

6.2.1 Criterion i

Physical destruction of or damage to all or part of the property.

The private hangar complex scope of the Undertaking will not result in any physical destruction or damage to all or part of a historic property. For archaeological resources, the entirety of this project area is located in areas of low archaeological sensitivity. There are no known sites and survey efforts did not reveal any evidence of extant cultural materials. However, it is acknowledged that potential materials may be extant, and that if discovered during construction, all work will cease and the NASA ARC Inadvertent Discovery Policy, Policy 8 in the ICRMP, will be followed. As for the built environment, all physical work is limited to the non-contributing areas of the NAS Sunnyvale Historic District no historic properties are located in the project area. While Buildings 511, 684, 686, and MF1003 will all be demolished, none of these contribute to the historic district, nor are they individually historic properties. The Moffett Field Golf Course will also be reconfigured to allow for the construction of the complex, but this too does not qualify as a historic property. Therefore, the private hangar complex will not cause an adverse effect under this example.

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6.2.2 Criterion ii

Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.

Rehabilitation Standard 1

A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships

The private hangar complex scope of the Undertaking will not alter the use of any historic property within the APE, particularly the NAS Sunnyvale Historic District and its contributors. The proposed hangars will perpetuate the historic and existing aviation use within the NAS Sunnyvale Historic District. While MF1003 will be removed to allow for the expansion of a new apron leading to the hangars, and a portion of the existing golf course will be reconfigured, neither of these properties are considered contributors to the district, nor are they historic in their own right. While the project area for the private hangar complex is largely open and appears undeveloped, due to the decommissioned MF1003 and open nature of the adjacent golf course, the placement of the hangars in this location will not disrupt any significant spaces or spatial organization within the NAS Sunnyvale Historic District. The hangars will be placed along the periphery of the airfield, which perpetuates the established pattern of development of supporting airfield infrastructure and buildings setback from the airfield, particularly the runways and connecting taxiways, preserving the openness of the airfield and not infringing upon any significant view corridors across the airfield, or in line with the runways towards San Francisco Bay. The buildings will also be comparably short in height in relation to other structures at MFA, notably Hangar 1, 2, and 3, and will not visually compete with the monumental presence of these structures (see Appendix B for Massing Simulations).

Therefore, the private hangar complex scope of the Undertaking adheres to Rehabilitation Standard 1.

Rehabilitation Standard 2

The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

The proposed private hangar complex is sited on an area with no historic properties and will not involve the alteration of any distinctive materials or features that characterize a historic property. In terms of spatial relationship, the construction of the private hangar

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complex along the periphery of the airfield runway and taxiway network will solidify the edges of the aviation areas around the central portion of MFA and reinforce the sense of place as a working airfield, particularly the contributing runways and taxiways. According to the 2013 HPSR, the placement of both historic and contemporary hangars along the edges of the airfield supports “the historic spatial character and texture of the Airfield Landscape.”²³ While the addition of the hangars would alter some viewsheds from the northeast corner of MFA towards Hangar 1, particularly from portions of the Moffett Field Golf Course and Naval Storage Depot, these are not considered to be significant view corridors of the district, as identified in the HPSR. Upon further analysis, the visual connections between the Naval Storage Depot and Hangar 1 are not significant in the context of the broader NAS Sunnyvale Historic District. However, the spatial connection between the Naval Storage Depot and the other elements of the munitions handling network, such as the East MF1002 and Building 69, are significant and unaltered by the siting of the private hangar complex. As such, the placement of the private hangar complex does not alter the spatial relationships of the airfield and its historic properties.

Therefore, the private hangar complex adheres to Rehabilitation Standard 2.

Rehabilitation Standard 3

Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, will not be undertaken.

The private hangar complex scope of the Undertaking will not create a false sense of historical development through the addition of conjectural features or other historical materials. All elements proposed as part of the scope will be clearly contemporary and differentiated from the contributing elements of the NAS Sunnyvale Historic District. Therefore, the private hangar complex scope of the Undertaking will adhere to Rehabilitation Standard 3.

Rehabilitation Standard 4

Changes to a property that have acquired historic significance in their own right will be retained and preserved.

The private hangar scope of the Undertaking will not affect any portion of a property that has acquired significance in their own right. The project area associated with the complex and immediate surroundings have been extensively studied, including recent evaluations of MF1003, Golf Course, Buildings 511, 684, and 686, none of which qualify

²³ AECOM, *Historic Property Survey Report*, 5-6

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as historic properties. Therefore, the private hangar complex scope of the Undertaking will adhere to Rehabilitation Standard 4.

Rehabilitation Standard 5

Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

As described previously, the private hangar complex will not physically alter the character-defining features of any historic property, including contributing elements within the NAS Sunnyvale Historic District. As part of the scope, MF 1003, the Moffett and Buildings 511, 684, and 686 will all be demolished, and portions of the Moffett Field Golf Course will be reconfigured, none of which are contributors to the NAS Sunnyvale Historic District, nor are they individual historic properties. The private hangar complex does involve the addition of a new aircraft parking apron, which will abut and connect the eastern parallel taxiway. However, the new apron will not physically disrupt the paved surface of the taxiway and will be clearly distinguished, leaving the historic design of the runway network in place.

Therefore, the private hangar complex adheres Rehabilitation Standard 5.

Rehabilitation Standard 6

Deteriorated historic features will be repaired rather than replaced. Where the severity of the deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.

The private hangar complex scope of the Undertaking does not involve the treatment of any deteriorated features belonging to a historic property and, therefore, will adhere to Rehabilitation Standard 6.

Rehabilitation Standard 7

Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

The private hangar complex scope of the Undertaking will not result in the cleaning of any historic properties. As such, no chemical or physical treatments to historic materials will be used in the context of this standard. Therefore, the private hangar complex scope will adhere to Rehabilitation Standard 7.

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Rehabilitation Standard 8

Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

As described previously, there are no known archaeological resources in the ADI associated with the private hangar complex scope of the Undertaking. The complex is located entirely within an area identified as having low archaeological sensitivity with no known archaeological sites. Additional pedestrian surveys of the area did not uncover any cultural materials or evidence. However, there is the noted potential for archaeological sites to be present. In the event that a discovery of archaeological materials, all work will be stopped and the proper inadvertent discovery protocols, outlined in ICRMP Policy 8, will be followed. Therefore, the private hangar complex scope of the Undertaking will adhere to Rehabilitation Standard 8.

Rehabilitation Standard 9

New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the historic integrity of the property and its environment.

The design of the hangars, while still being developed, will be both differentiated and compatible within the context of the expanded NAS Sunnyvale Historic District. First, the proposed private hangars will be clearly contemporary in design and construction and will not create a false sense of history and historical development in the setting of the district. Simultaneously, the simple yet refined design of the proposed hangar complex reflects upon several character-defining elements found within the historic district. As noted, the relatively large scale of the proposed complex is consistent within the setting of the airfield, although the height is still minimal and does not compete with the prominence of Hangars 1, 2, and 3 within the landscape of MFA. The simple massing and architectural articulation of the private hangar complex will reflect the nature of MFA and its restrained and utilitarian architectural vocabulary of the former Naval properties. Although the simple, box like massing is reflective of several historic properties found throughout the district – Hangars 1, 2, and 3; Buildings 69, 105, and 158 – the massing will be broken up by the connecting support facility section that separates the hangars in all configurations. This will reduce the visual bulkiness of the complex, especially in relation to Hangars 2 and 3, while also creating a sense of symmetry that is also exhibited throughout the district. By having the private hangars paired and the connecting facilities set back, this directly reflects the site orientation and spatial

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organization of Hangars 2 and 3 as paired structures with support facilities, including Building 55, set at the center. The setback siting of the private hangars from the East Parallel Taxiway will also retain the historic character, strong linear qualities, and overall functionality of the taxiway as part of the broader airfield.

In terms of materials, the private hangar complex will be framed structures predominantly clad in insulated metal panels. This is directly reflecting construction materials of Hangars 2 and 3, as well as other historic properties within the APE, which feature various industrial materials as cladding, including corrugated sheet metal, insulated panels, and concrete. The prominent hangar doors of the proposed complex will also reflect upon the sliding doors of Hangars 2 and 3 and will feature clerestory window bands, similar to the glazing found at the Hangar 2 and 3 doors. As a point of differentiation, the proposed hangar doors will be recessed within the primary façade, as opposed to Hangars 2 and 3 where the doors are supported by large, external support towers and box beams.

Overall, the preliminary design of the private hangar complex appears to adhere to Rehabilitation Standard 9. Where there are currently unknowns about the design, the design approach outlined in **Section 2.2** provides conditions that the design team must adhere to in order to create a design that is both compatible and differentiated from the NAS Sunnyvale Historic District and its contributors. Therefore, if these conditions are met, the Private Hangar Complex will adhere to Rehabilitation Standard 9.

Rehabilitation Standard 10

New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired

The private hangar complex could be removed without diminishing the integrity of a historic property. As described above, the private hangar complex is being constructed on a portion of the airfield with no historic properties. The future removal of these elements at a future date would revert the site to a state that is consistent with the existing conditions. Therefore, the private hangar complex will adhere to Rehabilitation Standard 10.

6.2.3 Criterion iii

Removal of the property from its historic location.

The Private Hangar Complex will not remove any historic property from its location. As part of this scope of the Undertaking, several buildings will be demolished and the Moffett Field Golf Course reconfigured, none of which are considered historic

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properties. Therefore, the private hangar complex scope of the Undertaking will not result in an adverse effect under this example.

6.2.4 Criterion iv

Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.

In terms of use and spatial organization, the historic district's significance is associated with aviation operations and military missions that occurred at the property between 1930 and 1961. As such, the introduction of the hangars will not introduce a new use to the airfield that will result in significant alterations. The private hangars will perpetuate the existing and historic use as a working airfield, which is consistent with the overall character of the district and its setting.

Therefore, the private hangar complex will not result in an adverse effect under this example.

6.2.5 Criterion v

Introduction of visual atmospheric, or audible elements that diminish the integrity of the property's historic features.

Audible and atmospheric elements will be primarily associated with temporary conditions during construction and will not diminish the integrity of any historic property. While increased aircraft to this area of the airfield will result in increased noise following the completion of the complex, this will be consistent with the conditions of MFA as a working airfield and the setting of the expanded NAS Sunnyvale Historic District and its contributors.

As for potential visual impacts, the proposed hangars will be located at the northeast periphery of the airfield, well outside the significant view corridors within the expanded NAS Sunnyvale Historic District, which, per the HPSR, include across the airfield between Hangars 1 to the west and Hangars 2 and 3 to the east, parallel with the airfield runways towards San Francisco Bay, and views from the air traffic control tower of Building 158 throughout the airfield. Other character-defining visual aspects of the historic district include the prominence and distinction of the monumental Hangars 1, 2, and 3 within the setting of the district. This visual prominence is enhanced further by the flat and expansive nature of the site, specifically in contrast to the adjacent aircraft parking aprons, runways, and taxiways, most of which are historic properties in their own right. While the proposed private hangars are large structures by nature, they are relatively small in comparison to Hangars 1, 2, and 3. This comparatively reduced height, coupled with the proposed location at the northeast corner of the airfield will

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further reduce any visual intrusion within the setting of the historic hangars, or within the broader historic district. Specific to visual connections to Hangar 1, while the new hangar complex may block view corridors from select locations within Moffett Field Golf Course and, perhaps, the Naval Storage Depot, these views are not necessarily considered significant. Rather the visual connection between the Naval Storage Depot and East MF1002 and Building 69 are more significant in establishing the spatial organization of the munitions handling network; these views will not be blocked by the siting of the private hangar complex.

Therefore, the new private hangar complex will not result in an adverse effect under this example.

6.2.6 Criterion vi

Neglect of a property which causes deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.

The construction of the private hangar complex will not result in the neglect of a historic property that will result in deterioration. The construction of the hangars will perpetuate the existing and historic use of the airfield, requiring sufficient upkeep of many of the existing contributors to the NAS Sunnyvale Historic District. Similarly, the addition of the hangars is intended to increase airfield capacity and not transfer use from a historic property, thus not resulting in the vacancy of a historic property that may result in deterioration. Therefore, the private hangar complex will not cause an adverse effect under this example.

6.2.7 Criterion vii

Transfer, lease, or sale of a property out of Federal ownership or control without adequately legally enforceable restrictions or conditions to ensure long-term preservation of the property's significance. The private hangar complex and the associated scope will not involve the transfer, lease, or sale of any portion of the expanded NAS Sunnyvale Historic District, its contributors, or any other historic property out of Federal ownership or control. Therefore, the Undertaking will not cause an adverse effect to historic properties under this example.

6.3 Office Building

The Undertaking will construct a five-story office building at the eastern portion of MFA. At present, there are two options that are being explored for office building siting: Option 1 is located at the eastern perimeter of MFA, south of the Moffett Field Golf Course, and

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Option 2 is located along the eastern periphery of the airfield, north of the proposed private hangar complex. Both locations are within the boundaries of the expanded NAS Sunnyvale Historic District.

6.3.1 Criterion i

Physical destruction of or damage to all or part of the property.

The Office Building Scope will not physically destroy or alter any historic property. In terms of archaeological resources, there are no known sites located in the ADI associated with the Office Building at either potential location. Additionally, both Options 1 and 2 are within areas identified as having low archaeological sensitivity, although Option 1 is in proximity to an area identified as having heightened historic-era archaeological sensitivity. While there is some overlap with this sensitivity area, the location has been heavily disturbed and subject to numerous investigations, none of which have uncovered any evidence of archaeological resources. Despite the low likelihood for any archaeological sites to be present in the area associated with the Office Building, the potential for any unknown sites to be extant in the ADI associated with either location is recognized. It is recommended that a monitor that meets the SOI Qualifications for archaeology be onsite when ground disturbing activities in the vicinity of identified areas of heightened archaeological sensitivity. Therefore, the Office Building scope of the Undertaking would not result in adverse effects to archaeological historic properties under this example.

For built environment resources, the Office Building scope of the Undertaking will not physically alter any historic property. While both potential locations are within the NAS Sunnyvale Historic District, the construction at either would not alter any contributor to the district. Specific to Option 1, the location is at the easternmost periphery of the Airfield and will result in the redevelopment of the former Aircraft Fuel Storage Tanks, which were determined to be non-contributors to the district. For Option 2, while the location is in proximity to the airfield and the contributing elements there, such as Building 442, the siting of the office building would be setback and would not physically alter the pad, nor infringe upon its spatial buffer surrounding it, which is an important character-defining feature.

Therefore, the Office Building scope of the Undertaking would not result in adverse effects to built environment historic properties under this example.

6.3.2 Criterion ii

Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses

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that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.

Rehabilitation Standard 1

A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships.

The Office Building scope of the Undertaking will not alter the use of any historic property within the APE, particularly the NAS Sunnyvale Historic District and its contributors. The proposed Office Building will perpetuate the historic and existing aviation use within the NAS Sunnyvale Historic District and will not disrupt the character-defining features of the district, nor any of its contributors. Physically, both potential locations for the office building are set away from any contributors to the district and will not lead to the alteration of any significant materials, features, or spaces. For Option 1, the Office Building would be located at the easternmost periphery of the airfield at the non-contributing former fuel storage tanks. The redevelopment of this area set far from the airfield and the significant features of the district would neither physically alter any character-defining features, nor would it disrupt any significant spatial relationships between the contributors. As for Option 2, the Office Building at this location would also not physically alter any materials, features, or finishes of a historic property, although the location is set closer towards the airfield and many contributors to the district, most notably Building 442. While the placement of the Office building at this location would have a more notable presence within the NAS Sunnyvale historic District, the important elements of the spatial organization would be retained. The building would be setback from the airfield by several hundred feet, retaining the open nature of the airfield in its existing condition. Specific to Building 442, the character-defining buffer space around the pad would also be retained by the setback of the building.

Therefore, the Office Building scope of the Undertaking adheres to Rehabilitation Standard 1.

Rehabilitation Standard 2

The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

Option 1

Under Option 1, the office building will be located at the eastern periphery of MFA (**Figure 10**). At this location, it will be far removed from the concentration of contributing properties at the airfield, and distanced from the Hangar 2/3 precinct and munitions handling network, preserving these properties in their exiting condition. This peripheral

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location will not visually infringe upon the setting of any historic property, nor the spatial organization of any character-defining features, spaces, or collections of contributing properties that collectively exhibit significance associated with the operation of the airfield during the period of significance established for the expanded NAS Sunnyvale Historic District that spans from 1930 to 1961.

Under this option, the proposed office building is also near the LMSD campus, which is treated as a historic property for the purposes of this study. The LMSD campus, located east of the Option 1 location, features a collection of highly advanced technical facilities. As such, the property is inherently inward looking and has no direct associations or relationships with MFA. The placement of the office building in proximity to the LMSD campus will not result in diminished character.

Therefore, the office building under Option 1 will adhere to Rehabilitation Standard 2.

Option 2

The location of the office building under Option 2 would be closer to the airfield, directly north of the proposed private hangar complex and south of Building 442 (**Figure 10**). At this location, the office building will be in closer proximity to historic properties that contribute to the expanded NAS Sunnyvale Historic District, most notably Building 442 and the connecting taxiways within the airfield. Although the building will be closer to these contributing properties, the building will still be set back from the airfield by several hundred feet and will not infringe upon the significant visual corridors that extend parallel to the runways towards San Francisco Bay, nor across the airfield between Hangar 1 and Hangars 2 and 3. Specific to Building 442, the setting of this feature is defined by a swath of open space which was designed as a safety zone during the handling of munitions. The location of the office building will be removed from this immediate area, leaving several hundred feet of buffer space around the pad. While surface parking in support of the office building would be constructed in part of this area, this will continue to exhibit a flat and open quality, which will be consistent with the existing setting of the property and will not result in a visual change that would diminish the historical integrity of the property. Similarly, the setback location in relation to the taxiways of the airfield will not result in a visual disruption that would alter the setting or spatial organization of these features. The largely glazed composition of the building would also reduce the massing and increase transparency, reducing visual bulkiness and clutter in the setting of the airfield.

Therefore, the office building under Option 2 will adhere to Rehabilitation Standard 2.

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Rehabilitation Standard 3

Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, will not be undertaken.

The Office Building scope of the Undertaking will not create a false sense of historical development through the addition of conjectural features or other historical materials. All elements proposed as part of the scope will be clearly contemporary and differentiated from the contributing elements of the NAS Sunnyvale Historic District. Therefore, the Office Building scope of the Undertaking will adhere to Rehabilitation Standard 3.

Rehabilitation Standard 4

Changes to a property that have acquired historic significance in their own right will be retained and preserved.

The Office Building scope of the Undertaking will not affect any portion of a property that has acquired significance in their own right. The potential location options associated with the Office Building and immediate surroundings have been extensively studied, including recent evaluations of the former fueling infrastructure and Moffett Field Golf Course, none of which qualify as historic properties. Therefore, the Office Building scope of the Undertaking will adhere to Rehabilitation Standard 4.

Rehabilitation Standard 5

Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

As described previously, the BMF scope includes the

Rehabilitation Standard 6

Deteriorated historic features will be repaired rather than replaced. Where the severity of the deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.

The Office Building scope of the Undertaking does not involve the treatment of any deteriorated features belonging to a historic property and, therefore, will adhere to Rehabilitation Standard 6.

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Rehabilitation Standard 7

Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

The Office Building scope of the Undertaking will not result in the cleaning of any historic properties. As such, no chemical or physical treatments to historic materials will be used in the context of this standard. Therefore, the Office Building scope will adhere to Rehabilitation Standard 7.

Rehabilitation Standard 8

Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

As described previously, there are no known archaeological resources in the ADI associated with the Office Building complex scope of the Undertaking. The entirety of Office Building at either location option is located in an area identified as having low archaeological sensitivity; however, the location at Option 1 is in the vicinity of an area identified as having heightened historic-era archaeological sensitivity. If Option 1 is selected, an SOI Qualified archaeologist will be present to monitor ground disturbing activities in the vicinity of these identified areas of sensitivity. Although both locations are extensively disturbed and previously surveyed with no evidence of cultural materials or sites, there is the possibility for unknown resources to be extant. If found during construction ICRMP Policy 8 for inadvertent discoveries will be followed. Therefore, the Office Building scope of the Undertaking will adhere to Rehabilitation Standard 8.

Rehabilitation Standard 9

New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the historic integrity of the property and its environment.

Generally, the proposed office building will be composed in a contemporary style that will not convey a false sense of historic development. While contemporary, the building will also exhibit a design that will be compatible within the setting of the historic district, particularly through its material palette, massing, and the use of simple articulation through pronounced structural elements. The building will feature a rectilinear plan and massing that is consistent throughout the district and is exhibited with many of the contributing properties. The use of glazing throughout the building will differentiate the

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office building by increasing visual transparency, reducing the bulkiness of the massing, and creating a unique and contemporary composition that is set apart from the historic properties.

The office building will likely be composed of textured concrete, metal paneling, extensive glazing systems, and prefabricated concrete panels. Additionally, the building will exhibit a relatively pronounced structural system set behind the glazing system, which will add to the composition. The materiality of these elements will reflect upon the industrial palette of concrete and metal elements found throughout the expanded NAS Sunnyvale Historic District, further establishing compatibility within the district, while also being differentiated through their contemporary application. The geometric and repeating forms of the structural elements included in the office building composition are similar to the various contributing properties that have structural elements as character-defining features of their designs, such as the truss systems within the monumental hangar structures, the pronounced door towers and box beams at Hangars 2 and 3, and the concrete compositions of the High Explosive Magazines.

Specific to Option 1, the potential location is in relatively close proximity to the LMSD campus. The proposed design of the office building will feature a contemporary design with a combination of pronounced structural elements, industrial material palette, and simple geometric articulation that is sympathetic to the utilitarian aesthetic of the technical facilities within the LMSD campus. This, coupled with the insular nature of the LMSD campus, will not result in adverse effects.

Overall, the preliminary design of the office building appears to adhere to Rehabilitation Standard 9. Where there are currently unknowns about the design, the design approach outlined in **Section 2.1** provides conditions that the design team must meet in order to create a design that is both compatible and differentiated from the NAS Sunnyvale Historic District and its contributors. Therefore, if these conditions are met, the Office Building will adhere to Rehabilitation Standard 9.

Rehabilitation Standard 10

New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired

Option 1

The placement of the office building at this location would be far removed from the central and significant portions of the expanded NAS Sunnyvale Historic District, as well as the LMSD campus. The removal of the office building from this location at a future date would revert the site to its existing condition with no alterations to any integrity of a

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historic property. Therefore, the office building under Option 1 would adhere to Rehabilitation Standard 10.

Option 2

The construction of the office building along the eastern perimeter of the airfield would not alter a historic property in a way that would result in diminished integrity upon the removal of the office building at a future date. The proposed location under this option would revert to a condition that is comparable to the existing. Therefore, the office building under Option 2 would adhere to Rehabilitation Standard 10.

6.3.3 Criterion iii

Removal of the property from its historic location.

No historic property will be removed from its historic location as part of the Office Building scope at either location option. At Option 1, the Office Building will lead to the removal and redevelopment of the former airfield fuel storage tanks, which are non-contributors to the NAS Sunnyvale Historic District. At Option 2, while the Office Building would be in closer proximity to contributors of the district, none would be relocated or moved as part of this scope. Therefore, the Office Building scope of the Undertaking would not result in adverse effects under this example.

6.3.4 Criterion iv

Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.

Option 1

The office building under Option 1 would not change the character of a historic property's use. Although the potential location is largely defined by former fuel storage tanks, the introduction of office space to this peripheral location within MFA would not result in the alteration to a historic property's features or setting. The placement of the office building at this location is consistent with the typical pattern of development at MFA, with the airfield and its operations infrastructure – both current and historic – located towards the center of the property, with support and supplemental spaces and uses located along the peripheral spaces. The location under Option 1 would reflect this established pattern and would not infringe upon any aspect of setting within the expanded NAS Sunnyvale Historic District, or its contributing properties.

As described previously, the Option 1 location is in proximity to the LMSD campus, located east and outside the boundaries of MFA. The LMSD campus, as a highly

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advanced technical facility, is inherently inwards looking by design and function with no direct associations with MFA. As such, the office building will not alter the setting of the LMSD campus in a way that would detract from its potential historic significance.

Therefore, the office building under Option 1 would not result in an adverse effect under this example.

Option 2

Under Option 2, the office building would be located closer to several historic properties, particularly the runways, taxiways, and Building 442. The introduction of the office building to this area would perpetuate a new use to an area that is primarily undeveloped; however, the building would be setback away from these features by several hundred feet to provide a visual buffer and prevent infringing upon any significant spatial relationships associated with these properties and their setting as elements of the airfield.

Therefore, the office building under Option 2 would not result in an adverse effect under this example.

6.3.5 Criterion v

Introduction of visual atmospheric, or audible elements that diminish the integrity of the property's historic features.

At both location options, atmospheric and audible elements associated with the office building will occur during construction and temporary in nature. The audible and atmospheric conditions will revert to the existing following the completion of construction.

In terms of visual elements, both locations have different conditions and proximities to historic properties. As described previously, Option 1 is located at the periphery of MFA and removed from historic properties associated with the expanded NAS Sunnyvale Historic District, and significantly removed from the significant view corridors throughout the airfield. At this location and the preliminary design features established, such as height and massing, the office building would not visually disrupt the setting of any historic property located within the APE.

As for Option 2, the location of the office building would be closer to the airfield and in closer proximity to historic properties that contribute to the expanded NAS Sunnyvale Historic District, most notably Building 442 and the connecting taxiways within the airfield. However, as described previously, the building will be set back from the airfield by several hundred feet and will not infringe upon the significant visual corridors that extend across the airfield, or towards San Francisco Bay along the runway network. The

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setback location in relation to the taxiways of the airfield and Building 442 of several hundred feet would retain a visual buffer that would not infringe upon their respective settings or significant spatial relationships, nor diminish other aspects of integrity.

Therefore, the office building would not result in an adverse effect under this example.

6.3.6 Criterion vi

Neglect of a property which causes deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.

As part of the Office Building scope of the Undertaking, ATCC operations will be shifted from Building 158 to the proposed Office Building. While these critical airfield operations will no longer be conducted out of Building 158, the historic property will be retained in its existing condition and will continue to serve as an operations building and access terminal to the airfield. As such, it would not be neglected in a way that would result in deterioration. Additionally, the Office Building scope of the Undertaking will not result in the neglect and deterioration of a historic property and, therefore, will not result in adverse effect under this example.

6.3.7 Criterion vii

Transfer, lease, or sale of a property out of Federal ownership or control without adequately legally enforceable restrictions or conditions to ensure long-term preservation of the property's significance.

The Office Building and the associated scope will not involve the transfer, lease, or sale of any portion of the expanded NAS Sunnyvale Historic District, its contributors, or any other historic property out of Federal ownership or control. Therefore, the Undertaking will not cause an adverse effect to historic properties under this example.

6.4 ATCC Camera Arrays

The ATCC camera arrays are a scope component that remains under development at this time. While the exact location and configuration is still be determined as part of the design process, it is likely that the ATCC camera array will include camera equipment mounted to towers, reaching an approximate height of 75', and located along the western periphery of the airfield, north and south of the West MF 1002, as well as a

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center location (**Figure 10**). Potential center locations include placement of a camera array on the roof of Hangar 1, as well as on a 125' tall tower located north of Hangar 1 and West MF1002. If implemented, one of these options will be utilized for the ATCC camera array, although it is not clear if these elements will be included in the final design of the Undertaking,

6.4.1 Criterion i

Physical destruction of or damage to all or part of the property.

For the ATCC camera array scope, no historic properties will be physical destroyed or damaged as part of the Undertaking. In terms of archaeological resources, the potential ATCC camera array locations are located in close proximity to identified areas of heightened historic-era and heightened prehistoric-era archaeological sensitivity at the north and south locations, respectively. The general area of the potential ATCC camera array locations, particularly the south location and its utility upgrades, were in close proximity to an archaeological pedestrian survey and boring investigations in 2017, which found no evidence of cultural materials, although some shell fragments were observed in the furthest south bore at an approximate depth of 6', which could be indicative of a buried prehistoric archaeological resource. In the development of the ATCC camera array design and placement of the south tower, locations within 75' of known archaeological sites will be avoided; however, if design restrictions require placement within this distance, an archaeological testing plan will be conducted before finalizing. If a potential location falls within 75'-125' of a known archaeological site, a monitor meeting the SOI Qualifications in archaeology will be present to conduct monitoring during ground disturbing activities. For the north tower location that overlaps with the identified area of heightened historic-era archaeological sensitivity, an SOI Qualified archaeologist will be onsite to monitor ground disturbing activities that occur. If any cultural resources are found during ground disturbing activities, all work will stop and the NASA ARC inadvertent discovery protocol, as outlined under Policy 8 of the ICRMP, will be followed. Therefore, the ATCC camera array scope of the Undertaking would not result in adverse effects to archaeological historic properties under this example.

In terms of the built environment, all towers are located within the boundaries of the NAS Sunnyvale Historic District. Both the north and south towers are set away from any contributing feature to the district and will not physically disrupt any of the materials, finishes or features. However, the central camera array would be installed on the roof of Hangar 1. The array would be a relatively small element of multiple cameras that would be mounted to the roof structure on a small tower structure. If this option were pursued, the installation of the camera array would take into consideration the historic nature of the property and would reduce the number of connection points to the historic materials,

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leaving the majority of the monumental structure in its existing condition. Minor alterations to Hangar 1 will not result in any physical damage to the structure. Therefore, the ATCC camera array scope of the Undertaking would not result in adverse effects to built environment properties under this example.

6.4.2 Criterion ii

Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.

Rehabilitation Standard 1

A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships.

The proposed ATCC camera arrays will perpetuate the historic and existing use of the NAS Sunnyvale Historic District as a working airfield. As described above, the north and south towers will be placed away from contributing elements and will not physically alter any distinctive materials or features to a historic property. As for the central array, the placement and attachment to Hangar 1 would be done so to minimize connection points and to respect the historic fabric of the structure. In terms of spatial relationships, all of the arrays will be consistent with the aesthetic of airfield instrumentation and will not visually block any significant view corridors, nor detract from the established historic character of the district. Specific to the central array at Hangar 1, this element would be relatively imperceptible once placed on the roof of the monumental structure and will be consistent with the airfield instrumentation aesthetic found throughout the airfield, including the roofs of the historic hangars. Therefore, the ATCC camera array scope of the Undertaking adheres to Rehabilitation Standard 1.

Rehabilitation Standard 2

The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

Overall, the ATCC camera arrays will likely be placed in a non-contributing area of the airfield where no physical alterations would occur. The exception being the potential location on the roof of Hangar 1; however, this would be mounted in a way that would

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not drastically alter the materials of the structure, nor would the array be large enough to perceptively alter the appearance or any character-defining features.

In the majority of instances, the ATCC camera arrays would be aesthetically comparable to existing airfield instrumentation, such as antennae or receivers, and would blend seamlessly into the overall setting of the airfield without altering any of the significant spaces or spatial relationship in the airfield. The potential 125' tall tower would be more notable within the setting of the airfield, although the light and open frame and relatively small footprint in relation to its height would offset the visual impact of the tower, leaving the spatial relationships of the airfield intact, particularly in relationship to Hangar 1 as the most prominent and significant structure at MFA. Additionally, it would be sited at the northern edge of West MF1002, leaving the character-defining expansive, paved surface of the apron in its existing condition.

Therefore, the ATCC camera array scope of the Undertaking would adhere to Rehabilitation Standard 2.

Rehabilitation Standard 3

Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, will not be undertaken.

The ATCC camera array scope of the Undertaking will not create a false sense of historical development through the addition of conjectural features or other historical materials. All elements proposed as part of the scope will be clearly contemporary and differentiated from the contributing elements of the NAS Sunnyvale Historic District. Therefore, the ATCC camera array scope of the Undertaking will adhere to Rehabilitation Standard 3.

Rehabilitation Standard 4

Changes to a property that have acquired historic significance in their own right will be retained and preserved.

The ATCC camera array scope of the Undertaking will not affect any portion of a property that has acquired significance in their own right. The project area associated with the arrays and immediate surroundings have been extensively studied and are largely situated in open peripheral areas of the airfield, or sited on Hangar 1, both of which have been extensively studied and their historic significance thoroughly understood. Therefore, the ATCC camera array scope of the Undertaking will adhere to Rehabilitation Standard 4.

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Rehabilitation Standard 5

Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

As described previously, the ATCC camera array scope will not result in the physical damage to any historic properties. The north and south arrays will be located in peripheral open areas of the airfield and will not physically disrupt any contributor to the NAS Sunnyvale Historic District, particularly the contributing airfield infrastructure and runway networks. The central array, however, will be located at the roof of Hangar 1. While this is considered the most significant structure in the district, all efforts to minimize points of attachment to the historic hangar will be undertaken, and will leave the vast majority of the monumental structure in its existing condition. Additionally, the size and scale the central tower, coupled with the aesthetic of airfield instrumentation, will leave the array relatively imperceptible and will not detract from the overall design of Hangar 1, nor its relationship with associated buildings and structures.

Therefore, the ATCC camera array scope of the Undertaking will adhere to Rehabilitation Standard 5.

Rehabilitation Standard 6

Deteriorated historic features will be repaired rather than replaced. Where the severity of the deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.

The ATCC camera array scope of the Undertaking does not involve the treatment of any deteriorated features belonging to a historic property and, therefore, will adhere to Rehabilitation Standard 6.

Rehabilitation Standard 7

Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

The ATCC camera array scope of the Undertaking will not result in the cleaning of any historic properties. As such, no chemical or physical treatments to historic materials will be used in the context of this standard. Therefore, the ATCC camera array scope will adhere to Rehabilitation Standard 7.

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Rehabilitation Standard 8

Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

As described previously, the prospective north and south tower locations are in proximity to areas of heightened historic-era and prehistoric-era archaeological sensitivity, respectively. At both locations, SOI Qualified archaeological monitors will be used when overlapping, or in the proximity of, areas identified as sensitive. Specific to the south tower where known sites are located in the vicinity, efforts to avoid the site will be taken. If, however, design and placement require the tower to be set within a 75' distance of the known site, a subsequent testing plan will be developed prior to construction. In addition to these precautions, the NASA ARC inadvertent discovery protocols outlined in Policy 8 of the ICRMP will be followed if cultural materials are found during construction activities. Therefore, under these conditions, the ATCC camera array scope adheres to Rehabilitation Standard 8.

Rehabilitation Standard 9

New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the historic integrity of the property and its environment.

The ATCC camera arrays will likely be simple camera systems located along the western periphery of the airfield. Aesthetically, these would reflect existing instrumentation found through the airfield ensuring compatibility within the setting of the expanded NAS Sunnyvale Historic District, while also being differentiated as obviously contemporary and advanced technical elements. For the 75' light framed towers, these elements would have a very slim profile that would have a minimal visual presence within the setting of the airfield, similar to other antennae arrays and instruments located throughout MFA. Additionally, these array options would be over 100' shorter than Hangar 1, retaining its visual prominence within the setting of the historic district.

For the roof-mounted option at Hangar 1, the camera array would be comparable to other instrumentation located at the roof. This, combined with its relatively imperceptible appearance compared to the size of the hangar, would ensure compatibility with Hangar 1, as well as other historic properties located throughout the district. The array would be mounted in a way that is sensitive to the historic materials of the structure and would not result in any damage that would impact the historic character of the property.

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The 125' tall option for the ATCC camera array is the most perceptible of the options. While this new structure would introduce a notably tall element to the airfield, the visual impacts to the setting of all historic properties in the APE would be minimal. First, the tower would have a light and open frame that would be visually permeable with voids throughout and no solid material planes. This, combined with the placement west of the airfield and north of the expansive open surface of West MF1002, would not infringe upon any of the significant view corridors, nor alter the significant spatial relationships throughout the property. Second, the tower would have a utilitarian aesthetic that is consistent with other instrumentation throughout the airfield. While this would be notably taller, the potential tower would reflect upon the existing antennae and other instruments found elsewhere in the airfield. The array would also be visibly contemporary and would not create a false sense of history within the setting of the historic district. Specific to Hangar 1, the 125' tall option would continue to be shorter than the structure, which, combined with its light framing, would not visually intrude on the prominence of Hangar 1 within the setting of the airfield. The placement of the tower would be slightly northwest of the original NAS Sunnyvale Historic District and would not visually disrupt the spatial organization of Hangar 1 with the relevant Shenandoah Plaza buildings located to the southwest, nor with the associated Buildings 32 and 33 located immediately east of the hangar.

Therefore, the ATCC camera array scope of the Undertaking would adhere to Rehabilitation Standard 9.

Rehabilitation Standard 10

New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired

In most options, the potential ATCC camera arrays will be located in non-contributing areas of the expanded NAS Sunnyvale Historic District. The future removal of these arrays would restore these areas to their existing conditions with no impact on the essential form and integrity of a historic property. The only exception is the potential array mounted at the roof of Hangar 1; however, the sensitive attachment to the roof that would be employed would allow for an easy removal that would not damage any of the materials and leave the imposing form of the structure in its existing condition.

Therefore, the ATCC camera array scope of the Undertaking would adhere to Rehabilitation Standard 10.

6.4.3 Criterion iii

Removal of the property from its historic location

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The ATCC camera array scope will not involve the removal of any historic property from its historic location and, therefore, will not result in an adverse effect under this example.

6.4.4 Criterion iv

Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.

The ATCC camera arrays would be instrumentation used in the safe and efficient operation of the airfield and would continue to support the ongoing aviation use within the expanded NAS Sunnyvale Historic District. As outlined above, these elements would be comparable to the existing instrumentation found at the airfield, while also being differentiated as contemporary devices. In all options, the arrays would be placed at the western periphery of the airfield and removed from the significant view corridors that contribute to the district's character. This is especially true of the 75' tall north and south towers, which would integrate into the setting of the airfield with ease.

The potential placement of an array on the roof of Hangar 1 would physically affect materials associated with the structure; however, this would be both relatively minimal and executed in a sensitive way to reduce any impacts to the buildings ability to convey significance.

The 125' tall center tower would be the most visible option. As described previously, the overall height of the tower and perceptibility of the structure would be reduced through its slender profile and open, visually permeable massing, particularly in relation to Hangar 1 and its associated control towers of Buildings 32 and 33, and other contributing properties located within Shenandoah Plaza. Similarly, its placement beyond the character-defining paved surface of West MF1002 would leave the expansive character of the apron in its existing condition with no visual disruption of the spatial organization of the feature. For these reasons, this option would not alter a historic property's setting in a way would result in an adverse effect.

Therefore, the ATCC camera array scope of the Undertaking would not result in an adverse effect under this example.

6.4.5 Criterion v

Introduction of visual atmospheric, or audible elements that diminish the integrity of the property's historic features.

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Any atmospheric or audible elements associated with the ATCC camera arrays would be associated with construction and temporary. Audible and atmospheric conditions would revert to the existing following the completion of construction.

As described above, the ATCC camera arrays would not diminish the integrity of any historic property. In all options, the arrays will reflect the typical non-contributing airfield instrumentation that is found throughout the expanded NAS Sunnyvale Historic District. This aesthetic combined with the relationship to the ongoing operation of the airfield, will ensure compatibility of the arrays within the setting of the district. Additionally, all arrays are located along the western periphery and are removed from the significant view corridors throughout the district.

For the 75' tall option, these will be at a height that is most compatible within the district. These arrays would have an imperceptible profile and would not diminish the integrity of any historic property in their vicinity. As for the Hangar 1 roof-mounted option, although it would be attached at one of the most prominent points within the district, the relatively minimal scale compared to the monumentality of the hangar would result in the array being imperceptible at this location. This would not visually diminish the integrity of the hangar, nor any of the historic properties throughout the expanded NAS Sunnyvale Historic District.

The 125' tall center tower option would be the most visible of the aforementioned array options. The height of this array would be notable large, although still significantly shorter than the nearby structure of Hangar 1. Additionally, the small footprint of the structure and visually permeable massing of the tower's open framing would reduce the visual impact of the array in relation to Hangar 1. While it would be visible from many vantage points throughout the expanded NAS Sunnyvale Historic District, the monumental size, scale, and massing of Hangar 1 would continue to dominate the setting of the airfield, as well as the setting of the various historic properties throughout the district. Similarly, the tower would be placed north of West MF1002, leaving the open expansive paved surface of the apron in its existing condition. The spatial organization and visual connections between West MF1002, Hangar 1, Buildings 32 and 33, and the airfield, would all remain in its existing condition.

Therefore, the ATCC camera array scope of the Undertaking would not result in an adverse effect under this example.

6.4.6 Criterion vi

Neglect of a property which causes deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.

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The ATCC camera array scope will not result in the neglect and deterioration of a historic property and, therefore, will not result in adverse effects under this example.

6.4.7 Criterion vii

Transfer, lease, or sale of a property out of Federal ownership or control without adequately legally enforceable restrictions or conditions to ensure long-term preservation of the property's significance.

The ATCC camera array scope of the Undertaking will not result in the transfer, sale, or lease of a historic property out of Federal ownership or control and, therefore, will not result in adverse effects under this example.

6.5 Site Upgrades

Site upgrades associated with the Undertaking include the 11th Ave & Enterprise Way Gate activation, the Bay Trail Bike/Pedestrian Gate improvements, reconfiguration of the Moffett Field Golf Course, upgrades to the Moffett Field Golf Course parking, and installation of the proposed water storage tanks.

6.5.1 Criterion i

Physical destruction of or damage to all or part of the property.

The various elements of the site upgrades scope will not result in the physical damage or destruction to any historic property. In terms of archaeological properties, the majority of these scope elements are located in areas of low archaeological sensitivity, except for select areas near the 11th Ave & Enterprise Way gate activation and the Moffett Field Golf Course Parking, both of which either overlap or in the vicinity of heightened areas of historic-era archaeological sensitivity. These locations have both been extensively disturbed, as well as surveyed with no archaeological materials or evidence of sites being found. However, where ground disturbing activities are occurring in the vicinity of these sensitivity areas, SOI Qualified archaeological monitors will be present during construction. In the event that materials are uncovered during construction, NASA ARC inadvertent discovery protocols, as outlined under Policy 8 of the ICRMP, will be followed. Therefore, under these conditions, the site upgrades scope of the Undertaking will not result in adverse effects to archaeological historic properties under this example.

In terms of built environment properties, all elements of the site upgrades scope are located at the eastern periphery of the NAS Sunnyvale Historic District. As such, none of the contributors, which are predominantly located towards the center of the property,

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will be physically altered. Additionally, the Moffett Field Golf Course is not considered a historic property. However, the Bay Trail Bike/Pedestrian Gate improvements are located on a small, select portion of the Alviso Salt Pond Historic Landscape. The existing pedestrian and bike gate is located on a small area of the existing earthen levees that define the 9,000-acre historic property. This scope also calls for the utilization of temporary lights and security camera, which will be set on top of the existing levee at that specific location. The only potential disturbance proposed as part of the Undertaking may include the installation of electrical and telecommunications infrastructure to the location. While this will likely involve some trenching at the project location at the levee, this will be limited to a minimal area leaving the expansive levee network in its existing condition. Additionally, the area of disturbance will be restored to its existing condition with no perceptible change to the earthen levee. As such, alteration of the Alviso Salt Pond Historic Landscape will not result in an adverse effect. Therefore, the site upgrades scope of the Undertaking will not result in adverse effects to built environment properties under this example.

6.5.2 Criterion ii

Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.

Rehabilitation Standard 1

A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships

The site upgrades scope of the Undertaking will not alter any use of a historic property in a way that would alter the distinctive materials, features, spaces, or spatial relationships. The majority of the scope element are occurring at the periphery of the NAS Sunnyvale Historic District, which will leave the more centrally located contributors and character-defining site features to continue operating as a working airfield. The peripheral placement will not physically disrupt these contributing elements, nor will they alter the significant spatial organizations of the NAS Sunnyvale Historic District.

While the Bay Trail Bike/Pedestrian Gate is located at the Alviso Salt Pond Historic Landscape, this placement too is peripheral in nature and relatively negligible in the context of the 9,000-acre cultural landscape of the salt ponds. Any alterations associated with this scope element will have no effect on the character-defining features or integrity of the Alviso Salt Pond Historic Landscape.

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Therefore, the site upgrades scope of the Undertaking will not result in an adverse effect under this example.

Rehabilitation Standard 2

The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

11th Ave & Enterprise Way

The gate activation is located at the eastern periphery of the expanded NAS Sunnyvale Historic District and is not in close proximity to any of the contributing properties. The alterations associated with opening the gate, as well as circulation improvements to Macon Road will not result in any alterations that are integral to a historic property's setting or character. Therefore, the 11th Ave & Enterprise Way scope will adhere to Rehabilitation Standard 2

Bay Trail Bike/Pedestrian Gate

The Bay Trail bike/pedestrian gate improvements largely involve the reutilization and activation of an existing gate located at the northeast corner of the MFA property, near the Alviso Salt Pond Historical Landscape. While select improvements will include a new lighting and security camera system, these elements will not result in the alteration of significant materials or features. Additionally, they will be pedestrian in scale and will not impact the neighboring historic properties of the expanded NAS Sunnyvale Historic District, the Alviso Salt Pond Historical Landscape, or the LMSD campus, all of which cover vast areas in relation to the small footprint of this scope.

Therefore, the Bay Trail Bike/Pedestrian Gate of this Undertaking will adhere to Rehabilitation Standard 2

Reconfiguration of Golf Course Holes

The proposed reconfiguration of the Moffett Field Golf Course involves shifting the existing holes at the west portion of the golf course to allow for adjacent constructions and improvements to occur. While the golf course itself is not historic, the area where work is proposed is directly west adjacent to the High Explosive Magazines (Buildings 70-74, 143 & 147) and the associated Naval Storage Depot. The reconfiguration of the golf course will leave the existing magazines in their existing condition, while also retaining the broader surrounding character of the Naval Storage Depot.

Therefore, the reconfiguration of the Moffett Field Golf Course of this Undertaking will adhere to Rehabilitation Standard 2

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Golf Course Parking

The proposed golf course parking upgrades will involve the construction of a surface parking lot at the southeast periphery of the MFA property, south of the existing substation on an area that is largely defined by an open undeveloped field. This area of the property does not contribute to any significance associated with the expanded NAS Sunnyvale Historic District. Additionally, the improvements of the parking are primarily pedestrian in scale with typical surface parking improvements; the golf course parking will not alter any physical materials or significance spatial relationships that characterize a historic property.

Therefore, the golf course parking scope of this Undertaking will adhere to Rehabilitation Standard 2.

Water Storage Tanks

The proposed water storage tanks would be located at the eastern perimeter of the MFA property, at the furthest periphery of the expanded NAS Sunnyvale Historic District in a non-contributing area far from contributing properties. The location of these tanks would be far removed from the character-defining aspects of the district, leaving the spatial characteristics of it and its contributing properties in their existing condition.

Therefore, the water storage tank scope of this Undertaking will adhere to Rehabilitation Standard 2

Rehabilitation Standard 3

Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, will not be undertaken.

The site upgrades scope of the Undertaking will not create a false sense of historical development through the addition of conjectural features or other historical materials. All elements proposed as part of the scope will be clearly contemporary and differentiated from the contributing elements of the NAS Sunnyvale Historic District, as well as the Alviso Salt Pond Historic Landscape. Therefore, the site upgrades scope of the Undertaking will adhere to Rehabilitation Standard 3.

Rehabilitation Standard 4

Changes to a property that have acquired historic significance in their own right will be retained and preserved.

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The site upgrades scope of the Undertaking will not affect any portion of a property that has acquired significance in their own right. The project area associated with the site upgrades and immediate surroundings have been extensively studied and are largely situated along the eastern periphery of the airfield, which has been extensively studied and their historic significance thoroughly understood. Therefore, the site upgrades scope of the Undertaking will adhere to Rehabilitation Standard 4.

Rehabilitation Standard 5

Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

As described previously, the site upgrades scope will not result in the physical damage to any historic properties. All of the scope elements are located at the eastern perimeter of the NAS Sunnyvale Historic District, set far from any contributors and leaving all historic properties associated with the district in their existing condition.

Specific to the Bay Trail Bike/Pedestrian Gate scope, the proposed improvements will involve upgrades to the existing gate that is situated on a portion of the Alviso Salt Pond Historic Landscape. However, this location in relation to the broader cultural landscape is negligible in size and also peripheral, leaving the overwhelming majority of the 9,000-acre property in its existing condition. Any physical alterations at the gate improvement location will be minimal with no notable affect on the landscape and its character-defining features.

Therefore, the site upgrades scope of the Undertaking will adhere to Rehabilitation Standard 5.

Rehabilitation Standard 6

Deteriorated historic features will be repaired rather than replaced. Where the severity of the deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.

The site upgrades scope of the Undertaking does not involve the treatment of any deteriorated features belonging to a historic property and, therefore, will adhere to Rehabilitation Standard 6.

Rehabilitation Standard 7

Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

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The site upgrades scope of the Undertaking will not result in the cleaning of any historic properties. As such, no chemical or physical treatments to historic materials will be used in the context of this standard. Therefore, the site upgrades scope will adhere to Rehabilitation Standard 7.

Rehabilitation Standard 8

Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.

As described previously, the 11th Ave & Enterprise Way and Moffett Field Golf Course Parking are in proximity to areas of heightened historic-era archaeological sensitivity. At both locations, SOI Qualified archaeological monitors will be used when overlapping, or in the proximity of, areas identified as sensitive. In addition to these precautions, the NASA ARC inadvertent discovery protocols outlined in Policy 8 of the ICRMP will be followed if cultural materials are found during construction activities. Therefore, under these conditions, the site upgrades scope adheres to Rehabilitation Standard 8.

Rehabilitation Standard 9

New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the historic integrity of the property and its environment.

11th Ave & Enterprise Way

As described above, the 11th Ave & Enterprise Way gate activation scope of the project is located at the eastern periphery of the expanded NAS Sunnyvale Historic District and is not located in proximity to contributors; this scope will not alter or destroy historic materials, features, or spatial relationships. As part of the gate activation, new chain link rolling gates will be constructed and the connection between Macon Road and Enterprise Way along 11th Avenue will be improved to facilitate increased cars. This work is compatible with the conditions and utilitarian aesthetics along the eastern periphery of MFA. The placement and use as a peripheral point of entry will not create a false sense of history.

Therefore, the 11th Ave & Enterprise Way scope will adhere to Rehabilitation Standard 9.

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Bay Trail Bike/Pedestrian Gate

The Bay Trail Bike/Pedestrian Gate scope involves the reactivation of an existing gate and improvements to circulation along established roads and bike paths. This is consistent with the existing conditions found at this location and will not alter the significant materials, features, or spatial relationships that characterize a historic property. Additionally, the peripheral placement and pedestrian scale of the improvements proposed will be compatible within the setting of both the expanded NAS Sunnyvale Historic District and the adjacent Alviso Salt Pond Historic Landscape, both of which are expansive properties with definitive footprints within the south San Francisco Bay area.

Therefore, the Bay Trail Bike/ Pedestrian Gate scope of the undertaking will adhere to Rehabilitation Standard 9.

Reconfiguration of Golf Course Holes

The reconfiguration of the Moffett Field Golf Course holes, particularly in the western portion around hole 14, will not destroy any historic materials, features, or spatial relationships. The golf course itself is not a historic property, but surrounds the Naval Storage Depot, which is an associated feature of the historic High Explosive Magazines. The Naval Storage Depot is defined by its open and undeveloped landscape that surrounds the magazines and is set within a secure perimeter fence. The reconfiguration scope will alter the specific hole locations adjacent to the depot but will not introduce any new elements that will disrupt the spatial relationships within the Naval Storage Depot. Additionally, the reconfiguration of the golf course will be consistent with the existing conditions surrounding the depot and will not alter the broader setting. As such, the spatial relationships associated with the Naval Storage Depot and the High Explosive Magazines will be retained in their existing condition.

Therefore, the reconfiguration of the Moffett Field Golf Course of this Undertaking will adhere to Rehabilitation Standard 9.

Golf Course Parking

As described above, the golf course parking improvements are occurring at the periphery of the airfield and not within the proximity to any historic property. The improvements of the scope include simple surface parking and pedestrian scale elements, such as signage and pedestrian crossing, which are consistent with this area of MFA and its primary use as a working golf course. These elements will be consistent with that ongoing use and will be compatible with the existing conditions of this location, while also not creating a false sense of historical development.

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Therefore, the golf course parking scope of this Undertaking will adhere to Rehabilitation Standard 9.

Water Storage Tanks

The water storage tanks will be located at the eastern perimeter of the MFA property, which coincides with the easternmost periphery of the expanded NAS Sunnyvale Historic District. These features, while of a notable height, will be far removed from any historic property or contributor to the district, and are still relatively small in scale compared to the monumental structures found throughout the expanded NAS Sunnyvale Historic District, such as Hangars 2 and 3. The placement of the tank, coupled with the overall industrial and utilitarian aesthetics, will be compatible with the character and broader setting of the expanded NAS Sunnyvale Historic District as a working airfield. At the same time, the features will clearly be contemporary and will not create a false sense of historical development.

Therefore, the water storage tanks of this Undertaking will adhere to Rehabilitation Standard 9.

Rehabilitation Standard 10

New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired

11th Ave & Enterprise Way

The 11th Ave & Enterprise Way scope includes limited improvements and alterations at the eastern periphery of MFA and the expanded NAS Sunnyvale Historic District. The scope is not in the vicinity of any contributing elements, and the removal of these improvements would not alter the essential form or integrity of a historic property. Therefore, the 11th Ave & Enterprise Way scope will adhere to Rehabilitation Standard 10.

Bay Trail Bike/Pedestrian Gate

The Bay Trail Bike/Pedestrian Gate scope is largely defined by the reactivation and improvement of existing infrastructure, with the exception of the addition of new security lighting and wireless cameras. If removed, this location and immediate adjacency to the periphery of the Alviso Salt Pond Historic Landscape, would be restored to its existing condition. Therefore, the Bay Trail Bike/Pedestrian Gate scope will adhere to Rehabilitation Standard 10.

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Reconfiguration of Golf Course Holes

The removal of the reconfigured golf course holes would not alter the historic integrity or form a historic property. This area is adjacent to the Naval Storage Depot, which is an associated landscape feature of the High Explosive Magazines located towards the center of the golf course. The zone is characterized by the open and undeveloped quality of the area, which has been increasingly defined by the evolution of the golf course and the construction of a secure perimeter. The removal of the reconfigured golf course holes would not alter any essential forms or integrity associated with the High Explosive Magazines and the associated Naval Storage Depot.

Therefore, the reconfiguration of the Moffett Field Golf Course of this Undertaking will adhere to Rehabilitation Standard 10.

Golf Course Parking

The proposed golf course parking lot is located on largely undeveloped areas of MFA at the periphery of the expanded NAS Sunnyvale Historic District. The future removal of these elements would restore the area to its existing condition and would not alter the historic form or integrity of a historic property. Therefore, the golf course parking scope of this Undertaking will adhere to Rehabilitation Standard 10.

Water Storage Tanks

The proposed water storage tanks are located on an undeveloped area at the eastern boundary of MFA and the expanded NAS Sunnyvale Historic District. If removed in the future, the location would be reverted to its existing condition, which does not contain, nor is in proximity to, any historic properties. Therefore, the water storage tank scope of the Undertaking will adhere to Rehabilitation Standard 10.

6.5.3 Criterion iii

Removal of the property from its historic location.

No historic property will be removed from its historic location as part of the site upgrades scope of the Undertaking and, therefore, would not cause an adverse effect under this example.

6.5.4 Criterion iv

Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.

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11th Ave & Enterprise Way

This 11th Avenue & Enterprise Way scope includes the installation of new chain gates and improved road connections at the eastern periphery of the MFA, adjacent to the namesake roadways and connecting to Macon Road. This reintroduction of a circulation path into MFA will not alter the ongoing use of the property as a working airfield. Additionally, the project area is removed from any contributing property, and none of these scope elements will affect the setting of a historic property. Therefore, the 11th Ave & Enterprise Way scope of the Undertaking will not result in an adverse effect under this example.

Bay Trail Bike/Pedestrian Gate

The improvements and reactivation of the Bay Trail Bike/ Pedestrian Gate will not introduce a new use to either the expanded NAS Sunnyvale Historic District, nor the Alviso Salt Pond Historic Landscape. The scope elements are pedestrian in scale and with no change to the character-defining features of either historic property, setting, or other aspects of integrity. Therefore, the Bay Trail Bike/Pedestrian Gate scope of this Undertaking will not result in an adverse effect under this example.

Reconfiguration of Golf Course Holes

As described previously, the reconfiguration of the golf course holes falls outside the Naval Storage Depot which is an associated feature with the historic High Explosive Magazines. The continued use of the area as a golf course will retain the existing conditions surrounding the High Explosive Magazines with no alterations occurring within the Naval Storage Depot. Therefore, the reconfiguration of the Moffett Field Golf Course of this Undertaking will not result in an adverse effect under this example.

Golf Course Parking

The addition of parking is all slated for non-character defining areas within the expanded NAS Sunnyvale Historic District, which will result in no physical alterations to historic properties. As outlined above, the expansion of the golf course parking and associated improvements will perpetuate the ongoing use of the northeast corner of MFA as a golf course, and the pedestrian scale of the improvements will have no effect on any historic property's setting or character. Therefore, the golf course parking scope of this Undertaking will not result in an adverse effect under this example.

Water Storage Tanks

As described previously, the water storage tanks are located at the eastern perimeter of MFA and the expanded NAS Sunnyvale Historic District, far from any historic properties, particularly contributors and the central portion of the district. The location, coupled with

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the overall utilitarian and industrial aesthetic of the tanks, will be consistent with the established character of the airfield and the setting of the historic properties therein. Similarly, the size and height of the tank, while notable, will still be relatively small in the context of the district, particularly in relation to the monumental character of Hangars 2 and 3. Therefore, the water storage tank will not result in an adverse effect under this example.

6.5.5 Criterion v

Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's historic features.

For all site upgrades associated with the Undertaking, all audible elements are associated with construction and will be temporary in nature. Atmospheric alterations, including increased circulation to otherwise undeveloped areas, will be comparable to normal, or nominally increased, and will not diminish the integrity of any historic property.

Potential visual effects are addressed under the individual site upgrade programs as follows:

11th Ave & Enterprise Way

As described previously, the improvements of the 11th Ave & Enterprise Way gate activation scope is located at the periphery of the MFA and includes improvements that are both pedestrian in scale and aesthetically consistent with the peripheral location. The majority of the elements include road construction and improvements, installation of signage, and new chain link fence rolling gates. None of these elements will visually detract from the expanded NAS Sunnyvale Historic District, nor any of the associated historic properties in a way that would diminish integrity.

Therefore, the 11th Ave & Enterprise Way scope will not result in an adverse effect under this example.

Bay Trail Bike/Pedestrian Gate

The Bay Trail Bike/Pedestrian Gate scope largely involves the reactivation of an existing gate at the northeast corner of MFA, and the associated improvements to existing elements. The only new components include a portable security light and wireless camera, neither of which will create a visual disruption in comparison to the expansive Alviso Salt Pond Historic Landscape to the north, nor the expanded NAS Sunnyvale Historic District to the south. This scope will have no effect on the integrity of either historic property.

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Therefore, the Bay Trail Bike/Pedestrian Gate scope of this Undertaking will not result in an adverse effect under this example.

Reconfiguration of Golf Course Holes

As described above, portions of the proposed reconfigured golf course holes will be adjacent to the Naval Storage Depot, which is an associated feature of the historic High Explosive Magazines. While the proposed work would alter the exact appearance surrounding the depot, the resulting conditions would be comparable to the existing golf course. Most significantly, the Naval Storage Depot itself would be unaltered, leaving the historic integrity of the High Explosive Magazines intact.

Therefore, the reconfiguration of the Moffett Field Golf Course holes will not result in an adverse effect under this example.

Golf Course Parking

Work associated with the expanded golf course parking will not visually disrupt the setting of any historic property. The proposed work is located at the northeast periphery of MFA, which is already prominently defined by the ongoing operations of the golf course. The addition of the expanded surface parking and its limited signage and pedestrian improvements will not create a visual departure from the existing conditions that will affect the historic setting or other aspects of integrity of the expanded NAS Sunnyvale Historic District, nor any of its contributing properties. Therefore, the golf course parking scope of this Undertaking will not result in adverse effects under this example.

Water Storage Tanks

The water storage tanks will not visually disrupt the setting of any historic property. The tanks will be located at the eastern perimeter of the MFA property, which coincides with the eastern boundary of the expanded NAS Sunnyvale Historic District. While the area is currently undeveloped and the introduction of the tanks will create a new, notably large series of structures, their placement at the periphery of MFA far from the significant view corridors, as well as their industrial and utilitarian aesthetic, will be sympathetic to the setting of the historic district. Similarly, the structures are relatively small compared to the monumentality of Hangars 2 and 3, and will not disrupt the visual prominence of these structures on the east side of the MFA property. Therefore, the water storage tank scope of this Undertaking will not result in adverse effects under this example.

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6.5.6 Criterion vi

Neglect of a property which causes deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.

The site upgrades scope will not result in the neglect and deterioration of a historic property. Therefore, the site upgrades scope of the Undertaking will not result in an adverse effect under this example.

6.5.7 Criterion vii

Transfer, lease, or sale of a property out of Federal ownership or control without adequately legally enforceable restrictions or conditions to ensure long-term preservation of the property's significance.

None of the proposed site upgrades will involve the transfer, lease, or sale of a property out of Federal ownership or control. Therefore, the site upgrades scope of the Undertaking will not result in an adverse effect under this example.

6.6 Summative Effects to the NAS Sunnyvale Historic District

The proposed Undertaking involves the construction of several new facilities and site improvements at MFA, primarily located at the eastside of the airfield; all of the scope elements are located within the boundaries of the NAS Sunnyvale Historic District. In terms of physical effects to the district, the majority of the facilities are located in non-contributing areas and will not result in alterations to any of the contributing properties within the NAS Sunnyvale Historic District. However, select scope items, such as the BMF and ATCC Camera Arrays will involve alterations to contributors.

First and foremost, the BMF scope will result in the removal of Building 69. While this is a small property and contributor of lesser significance, especially in comparison to the airfield infrastructure and monumental hangar structures, it is still an integral component to the munitions handling network, which is centered around the northeast corner of the airfield. While the loss of Building 69 would diminish some aspects of integrity to the district, overall the majority of the contributors would be retained in their existing condition with only diminished aspects of integrity of setting, design, and association to those contributors associated with the munitions handling network. Other alterations associated with the BMF include the installation of the solar panel canopy array, which

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would be installed across a portion of the existing bus surface parking lot, including the easternmost portions of East MF1002. While much of the apron would be left in its existing condition, the installation of the canopies would detract from the flat, expansive paved nature of the apron, particularly its relationship to Hangars 2 and 3 and the separation of the monumental hangars from the support functions along the periphery. These canopies, while obstructed from view by the hangars from many significant vantage points, such as Hangar 1, will both physically alter a portion of the contributing apron and its character-defining features, as well as the spatial relationship between the airfield and the eastern contributors.

In terms of visual effects, the preliminary siting, design, and design conditions of the proposed facilities (outlined in **Section 2.2**) will move to create facilities that are both compatible, yet differentiated, within the setting of the NAS Sunnyvale Historic District. As outlined in the previous sections and the analysis of each facility in relation to the relevant contributors of the district, siting of the facilities takes into consideration placement of the buildings and structures in relation to significant features of the district. All major facilities are sited in a way that will not physically affect contributing elements to the district, while also being set back from flat and expansive airfield features to respect the open visual characteristics, spatial organizations, and buffers associated with significant spaces. Additionally, the placement of all facilities, primarily towards the eastern periphery of the district, respects the more centrally located contributing elements of the airfield. This also leaves the significant view corridors – between Hangars 1 and Hangars 2/3, views across the airfield towards San Francisco Bay and the control tower at Building 158 – in their existing condition. All buildings and structures will be clearly contemporary in design and will not create a false sense of historical development in the district, and will be smaller in height compared to the monumental nature of Hangars 1, 2, and 3, preserving their visual prominence within the setting of the airfield. The placement of the buildings also respects the established pattern of development of the airfield, leaving the main central runway features and original 1930s Shenandoah Plaza portion intact with more modern and contemporary supportive facilities constructed along the airfield perimeter.

While the buildings will likely have a more contemporary style, they will feature design elements and materials that reflect the existing vocabulary of the district. For many of the supportive structures associated with the Undertaking, such as the gate infrastructure, ATCC camera arrays, and water storage tanks, these will have an industrial aesthetic consistent with the setting of the airfield and will not detract from the established character of the district.

The visual effects and alterations to the spatial organization to the district will be concentrated at the northeast corner, leaving the original Shenandoah Plaza portion and much of the airfield in its existing condition. While some of these alterations

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associated with the BMF, most notably the removal of Building 69 and the introduction of the solar panel canopy arrays, will alter the spatial organization and setting of contributors at the northeast corner of the airfield, the majority of the district will be retained. These alterations will result in diminished historical integrity; however, the vast majority of the contributors will be retained in their existing condition, and the design conditions outlined for the new facilities will further ensure the compatibility within the setting and established character of the district. Therefore, despite the adverse effects caused from the alterations to specific contributors, the NAS Sunnyvale Historic District and its expanded boundaries will continue to retain sufficient historical integrity to qualify as being eligible for listing on the NRHP.

6.7 Summary of Adverse Effects

The Undertaking features several elements that are divided into three broad programs including the BMF, private hangar complex, and office building, with supporting improvements to improve circulation access and continued golf course use.

Adverse effects resulting from direct alterations of the Undertaking include the removal of Building 69 and the installation of the bus electrification infrastructure (solar panel canopy arrays, charging stations, supporting infrastructure) on East MF1002 as part of the BMF scope of the Undertaking. The removal and physical alterations of these contributors will result in diminished integrity, thus resulting in adverse effects. Table 2 lists the historic properties in the APE and anticipated project effects on each historic property.

Although there appears to be no archaeological resources in the ADI, there is potential for unknown resources to be extant, particularly in relation to the future locations of the ATCC camera arrays. As outlined in the description, the design of the ATCC camera arrays will not be sited within 75' of previously documented archaeological sites and will utilize a monitor that meets the SOI Qualifications for archaeology if sited between 75'-125' of a known archaeological site; an archaeological testing program will be implemented if design requires a location within 75' of a known site. Additional ground disturbing activities are occurring in the vicinity of identified areas of heightened historic-era archaeological sensitivity, specifically near the 11th Avenue/Enterprise Way Gate Reactivation and the Building 934. While previous surveys indicate no evidence of archaeological resources in this vicinity, a qualified archaeological monitor will be present during initial ground disturbing activities. In the event that archaeological materials are discovered, all work will be halted, the NASA Cultural Resources Manager will be notified, and appropriate steps outlined in the ICRMP Protocol 8: Inadvertent Discovery, will be implemented, resulting in no adverse effects.

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Adverse effects caused by visual alterations within the setting of historic properties will also result from the removal of Building 69 and the installation of the solar panel array canopies and charging stations, which will extend over the eastern portion of East MF1002. The removal of Building 69 will also result in indirect effects to the High Explosive Magazines and Building 442, which collectively form the munitions handling network at the eastside of the airfield. The removal of Building 69 will disrupt the spatial organization of this system, thus diminishing several aspects of historical integrity, including location, design, setting, feeling, and association. The aircraft parking apron, which is a historic property in its own right, is defined by the expansive, open paved surface. This is also a significant element of the setting for neighboring historic properties at the eastside of the expanded NAS Sunnyvale Historic District, particularly Hangars 2 and 3.

At this time, the major Undertaking components are designed at a conceptual level. Based upon these preliminary designs, the overall stylistic treatment of the main buildings – Bus Maintenance & Operations Building, Bus Washing Building, Private Hangar Complex, and the Office Building – will be differentiated within the NAS Sunnyvale Historic District as contemporary structures, while also being compatible within the setting of the expanded NAS Sunnyvale Historic District through placement, massing, and adhering to a comparable aesthetic vocabulary and material palette. As such, these preliminary designs for the main buildings appear to adhere to the applicable Secretary of the Interior's Standards and criteria examples of adverse effect relevant to new construction within historic settings. The future designs will continue to adhere to the design approach outlined in Section 2.2 which outlines a series of criteria that will be taken into consideration in developing designs that are sensitive to the historic character of the district. By adhering to this approach, the design of the buildings proposed as part of the Undertaking will be compliant with the Standards. As such, the building designs will have no adverse effect on any historic properties themselves. All adverse effects associated with the Undertaking are those outlined in the paragraphs above.

Table 2. Summary of Historic Properties Affected

Bldg. #	Bldg. Name	Effects
01	Hangar 1	No Adverse Effect
02	Gymnasium/ Balloon Hangar	No Effect
05	Water Tower	No Effect
10	Heat Plant	No Effect

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Bldg. #	Bldg. Name	Effects
15	Security Station/ Fire Station and Laundry	No Effect
16	Public Works/ Locomotive Crane Shed	No Effect
17	Administration/ Admirals Building	No Effect
17a	Memorial Anchor	No Effect
18	Unmanned Aerial Vehicle Research Building/ Aerological Center	No Effect
19	Industry Partners Building/ Bachelor Enlisted Quarters	No Effect
20	Bachelor Officer Quarters	No Effect
21	Garages/ Bachelor Officers Garage	No Effect
22	Garages/ Bachelor Officers Garage	No Effect
23	Carnegie Mellon University/ Dispensary	No Effect
24	Carnegie Mellon University Storage/ Ambulance Garage	No Effect
25	Admin. Building/ Recreation Building	No Effect
26	Gate House	No Effect
32	North Floodlight Tower	No Adverse Effect
33	South Floodlight Tower	No Adverse Effect
40	Flagpole & Grounds	No Effect
46	Hangar 2	Adverse Effect (changes to setting)
47	Hangar 3	Adverse Effect (demolition)

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Bldg. #	Bldg. Name	Effects
55	Heat Plant	No Effect
69	Inert Ammunition Storage	Adverse Effect (demolition)
70	Fuse & Detonator Magazine	Adverse Effect (changes to setting)
71, 72, 73, 74	High Explosive Magazines	Adverse Effect (changes to setting)
105	Airfield Lighting Vault	No Effect
106	Aircraft Compass Calibration Pad	No Adverse Effect
137, 138, 139, 140	Aircraft Fuel Storage Tanks	N/A
141	Tank Truck Filling Rack	N/A
143, 147	High Explosive Magazines	Adverse Effect (changes to setting)
158	Flight Operations Building & Tower	No Adverse Effect
329	Ultra-High Frequency/ Very High Frequency Receiver Building	No Effect
442	Ordnance Handling Pad	No Adverse Effect
454	Ultra-High Frequency/ Very High Frequency Transmission Building	No Effect
511	Weapons Station	N/A
684	Ground Maintenance Storage	N/A
686	Parachute Repair Building	N/A

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Bldg. #	Bldg. Name	Effects
934	Moffett Field Golf Course Clubhouse	N/A
A1-I1	Housing & Garages	No Effect
MF1000	Runway 32L/ 14R	No Adverse Effect
MF1001	Instrument Runway 14L/ 32R	No Adverse Effect
MF1002	Aircraft Parking Aprons	Adverse Effect (alteration and changes to setting)
MF1003	High-Speed Aircraft Fueling Pits	N/A
MF1016	Parallel & Connecting Taxiways	No Adverse Effect
N/A	Moffett Field Golf Course	N/A
N/A	Naval Storage Depot	Adverse Effect (changes to setting)
N/A	Alviso Salt Pond Historic Landscape	No Adverse Effect
N/A	LMSD Campus	No Adverse Effect

7.0 Resolving Adverse Effects

In order to resolve adverse effects under Section 106, it is the lead federal agency's responsibility to consult with SHPO and other interested parties in finding solutions to avoid, minimize, or mitigate adverse effects to historic properties.

The adverse effects that must be addressed include the following:

1. Removal of Building 69 as a contributor to the NAS Sunnyvale Historic District, including disruption to the munitions network at the eastside of the airfield.
2. Direct and indirect alterations to East MF 1002 through the construction of the solar panel canopy arrays, electric vehicle charging stations, and support infrastructure.

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3. Alterations to the spatial organization and setting of the Eastside/ Airfield contributors to the NAS Sunnyvale Historic District.
4. Potential for finalized designs to visually alter the setting of historic properties within the NAS Sunnyvale Historic District

The following section identifies alternatives to some of the Undertaking scope elements that have the potential to result in adverse effects, a list of potential interested parties, as well as preliminary mitigation measures developed to resolve any adverse effects that may be incorporated into a future Memorandum of Agreement (MOA).

7.1 Historic Design Conditions

The design team selected for the Undertaking will consult with a historic architect or architectural historian who meets the SOI Qualifications in their respective fields, for the development of the designs for each of the primary buildings and structures, including the Maintenance & Operations Building, the Bus Washing Building, the Private Hangars and the Office Building per the design conditions outlined in **Section 2.2**. The primary goal will be to ensure that the finalized designs for the buildings and primary structures shall be compliant with the Secretary of the Interior's Standards for Rehabilitation, and are compatible with the surrounding historic properties, as well as within the setting of the NAS Sunnyvale Historic District. By adhering to the conditions outlined in the design approach and meeting the Standards, the design for the buildings will be compatible, yet differentiated, within the setting of the NAS Sunnyvale Historic District and would not result in adverse effects.

As part of the design process, the design team will continue to consult with the NASA ARC Cultural Resources Manager, SHPO, and all consulting parties as the designs move forward. SOI Qualified architectural historians and/or historic architects will review the designs and assess them for compliance with the Rehabilitation Standards, as well as the design conditions outlined in **Section 2.2**. The NASA ARC Cultural Resources Manager and PV will submit the finding of design compliance to the SHPO for review and comment early enough in the design process for additional consultation and design recommendations to occur, likely in line with the 30% schematic design phase. Upon receiving comments, the design team and SOI Qualified consultants will incorporate recommendations into the design and respond to concerns from SHPO. Additional reporting will likely occur further along in the design process, potentially at the 60% schematic design phase. Consultation with the potential interested party will also occur during this period, likely in the form of workshops with relevant organization representatives; all comments and correspondence will be documented.

By adhering to the conditions associated with the design approach, meeting the Standards, and continuing to consult with the relevant parties as part of the design

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process, the design for the buildings will be compatible, yet differentiated, within the setting of the NAS Sunnyvale Historic District and will not result in adverse effects.

7.2 Potential Alternatives

7.2.1 Building 69

Building 69, the former inert ammunition storage building, is a simple one-story concrete building and is a contributor to the expanded NAS Sunnyvale Historic District. It was initially used to store the spent munitions and is part of the larger ammunition storage system network, which includes Building 442 and magazines located on the eastside of the airfield. Building 69 is significant under Criterion A for its associations with the operation of MFA from its construction in 1943 through to the end of fighter operations in 1961.

As part of the Undertaking's BMF scope, the area surrounding and including the existing bus surface parking lot will be reconfigured to improve efficient and safe circulation to accommodate the increased bus traffic. In order to fully execute this portion of the BMF scope, Building 69 must be removed from its current location at the northeast corner of the existing surface parking lot. The two alternatives for addressing Building 69 include relocation and demolition.

Relocation as an alternative is problematic for several reasons. First, the building's solid concrete construction presents unique challenges from a logistics and engineering standpoint. While the full feasibility of this has not been analyzed extensively, initial observations indicate that the act of relocating Building 69 in its existing condition will be technically challenging. Second, there are no logical relocation sites. The Eastside area of the airfield does not appear to have any areas that would accommodate the building while also retaining sufficient historical integrity. Additionally, the building is significant in relation to other elements of the munitions handling network at the airfield, which involves spatial connections with the ammunition magazines located to the northeast, as well as Building 442 and East MF1002. By relocating the building outside of this configuration to another area of the airfield, this significant spatial organization would be disrupted and would greatly diminish the historical integrity of Building 69, particularly its integrity of location, design, setting, feeling, and association. Therefore, the relocation alternative of Building 69 does not appear to reduce the potential for adverse effects, the expanded NAS Sunnyvale Historic District retains its NRHP eligibility under both scenarios, so demolition is preferred.

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7.2.2 Solar Panel Array Canopies

The solar panel array canopies associated with the BMF will result in an adverse effect to several contributors at the eastside airfield portion of the expanded NAS Sunnyvale Historic District, particularly East MF1002, Hangars 2 and 3, and the other contributing elements located on the eastside of the NAS Sunnyvale Historic District.

Alternative locations were explored, but the amount of surface area required for solar panels to support the electrification and emission goals of the bus fleet require an extensive canopy network. Analysis of the property has revealed multiple constraints that have greatly limited placement options. As such, the quantity of solar panels and general environmental constraints has determined that the proposed location, including the intrusion on the eastern portion of East MF1002, is the most realistic in supporting the emissions goals of the Undertaking.

7.3 Interested Parties

With the Undertaking specifically focused on developing elements within MFA, particularly at the northeast corner, potential interested parties identified include those with an inherent interest in the history of MFA. As the likelihood for encountering tribal cultural resources is low and there are no federally recognized tribes associated with the land encompassing MFA, Native American consultation was not undertaken. As such, the following party may be invited to participate in the Section 106 consultation process for this Undertaking:

- The Moffett Field Historical Society

7.4 Proposed Mitigation Measures

In developing mitigation measures to resolve adverse effects, there are several factors that should be considered. According to the ACHP, creative and effective mitigation measures for resolving adverse effects under Section 106 should address the following considerations:

1. *Consider the significance of the affected property.* Mitigation should be generally related to the significance of the property that is being adversely affected. Things to consider include areas of significance, integrity, qualifying characteristics, and boundaries. Compare the importance of one historic property relative to other properties of its type. Those properties that have a greater level of significance generally warrant greater levels of mitigation.
2. *Consider the public benefit.* The National Historic Preservation Act recognizes that preservation is a public interest so ideally mitigation will provide a public benefit to the community in which the resource is located. Educational materials benefit the public by

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increasing knowledge of and appreciation for the past. Local consulting parties are usually aware of the preservation needs of their community and therefore are useful, indeed critical, resource for mitigation ideas that can best benefit the public.

3. *Consider the needs of all parties.* The primary focus of consultation should be on meeting the needs of those consulting parties who ascribe importance or value to a property. This is especially true of traditional cultural properties and properties that are significant to local communities.
4. *Consider mitigation that enhances knowledge and protection of historic properties.* When a building has been adequately documented, consider alternative mitigations that enhance the knowledge of and/or protection of similar property types. Rather than (or in addition to) documenting a building that is to be removed, consider the historic contexts or survey updates. This could also involve the development of educational programs or the preservation of archaeological sites outside of a project area.
5. *Consider cost.* The cost of mitigation should be proportionate to the property's significance and integrity and the scale of the effects of the project. Also keep in mind that the use of public monies must be justifiable. Finally, there must also be a clear connection between the resource affected and the mitigation plan and it must be demonstrable that the mitigation is in the public interest.

All of these factors have been considered in developing mitigation measures for resolving adverse effects for the Undertaking.

8.0 Conclusion

The Undertaking involves the construction of several project components, all located at the eastside of MFA. These project components include:

1. BMF with operations and maintenance building, bus washing building, bus parking upgrades, and installation of large solar panel arrays in support of the future electrification of the Google bus fleet.
2. Private hangar complex, a new aircraft parking apron, and associated site upgrades, including reorganization of the western portion of the Moffett Field Golf Course.
3. New office building located at either the eastern perimeter of the MFA property or east of the airfield along Zook Road, as well as potential ATCC camera arrays at select prospective locations on the westside of the airfield.
4. Preconstruction investigations, including geotechnical boring and utility location services.

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5. Circulation upgrades for automobile, bike, and pedestrians, including the gate activation at 11th Avenue and Enterprise Way, improvements to the Bay Trail bike/pedestrian gate, and reorganization of golf course surface parking.

While the designs for the buildings are still under development, the overall design approach specifically outlines a series of conditions that will lead to the development of building designs that are both compatible, yet differentiated, within the setting of the NAS Sunnyvale Historic District. By adhering to these conditions, the building designs themselves will not result in adverse effects.

However, scope elements associated with the BMF, including the demolition of Building 69 and the construction of the solar panel canopy arrays over East MF1002, will diminish the integrity of two contributors to the NAS Sunnyvale Historic District. Demolition of Building 69 will directly affect the historic property, whereas the large solar panel canopy arrays at East MF1002 will physically alter the historic property and indirectly disrupt the character-defining flat, expansive nature of the property. Therefore, the Undertaking will result in adverse effects to historic properties, and Stantec recommends a finding of Adverse Effects.

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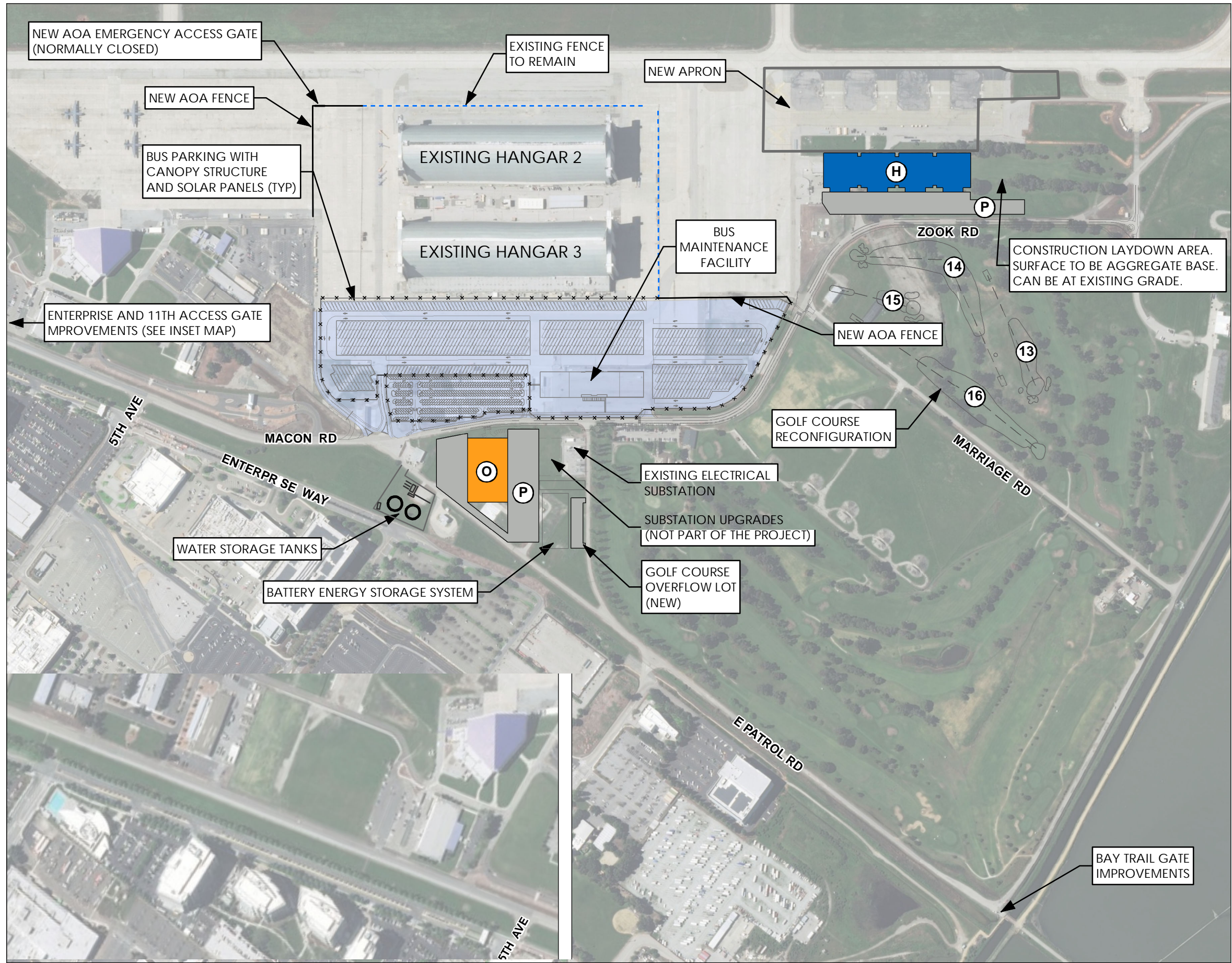
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Appendix A Preliminary Site Layouts
January 15, 2021

Appendix A Preliminary Site Layouts



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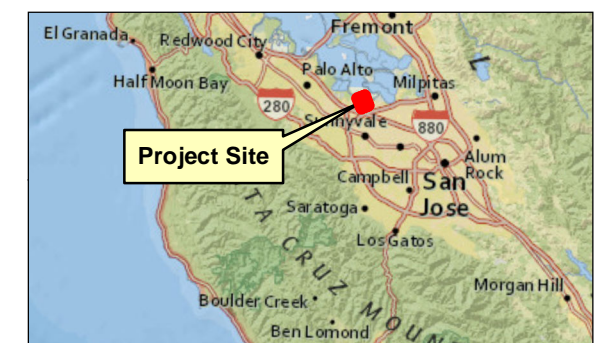
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- Private Hangars
- Parking
- Golf course hole number
- Bus Maintenance Facility
- Existing Fence to Remain
- New AOA Fence
- Bus Maintenance Facility Fence



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Feet
(At original document size of 11x17)
1:6,000

Resource Notes

1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project 181710453

Eastside Airfield Improvements Project
Section 106 Technical Report

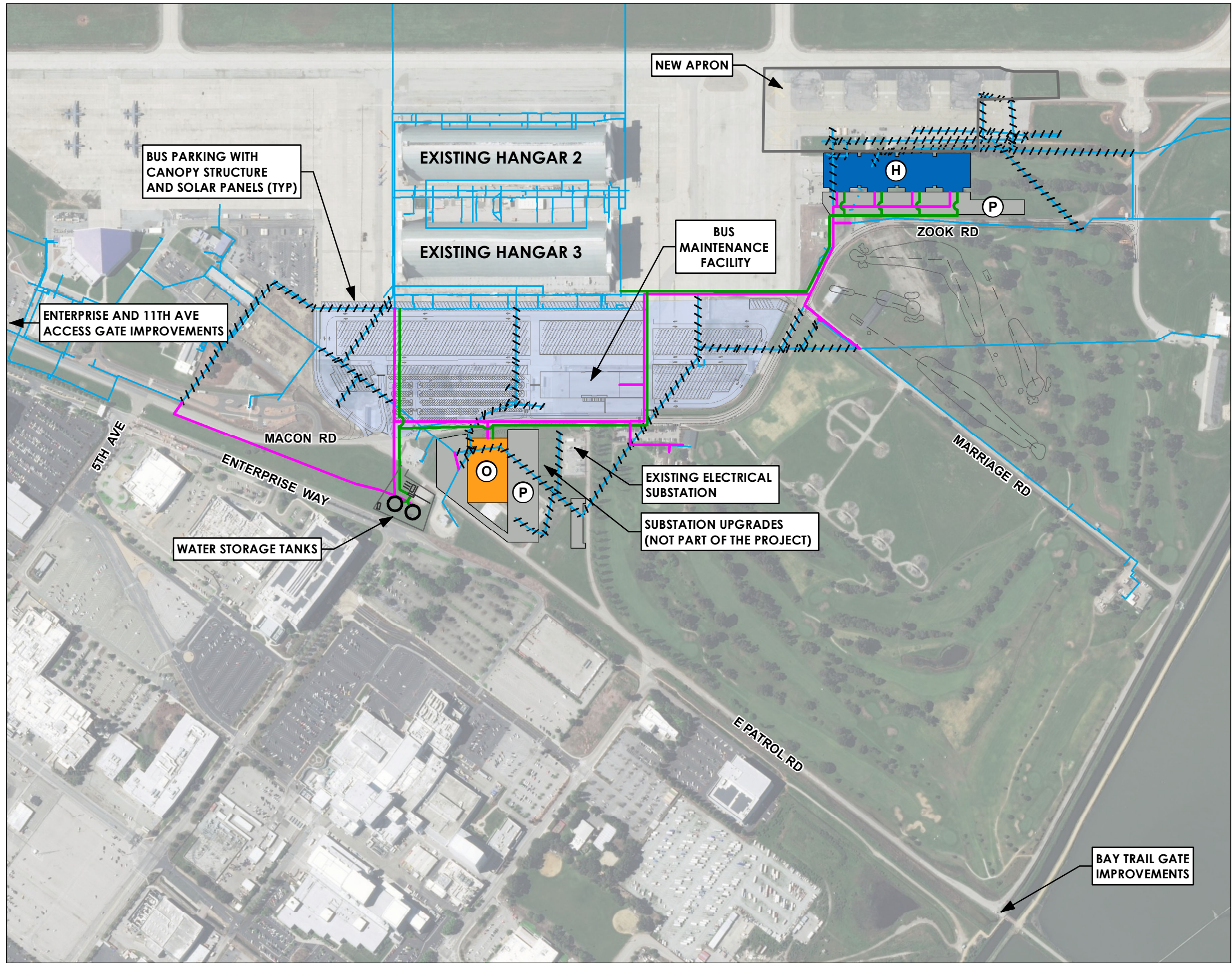
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Option 1 - Site Plan

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Revised: 2020-11-02 By: lnsmith



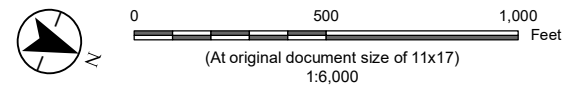
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- Office Building/Alternatives
- Private Hangars
- Parking
- Bus Maintenance Facility

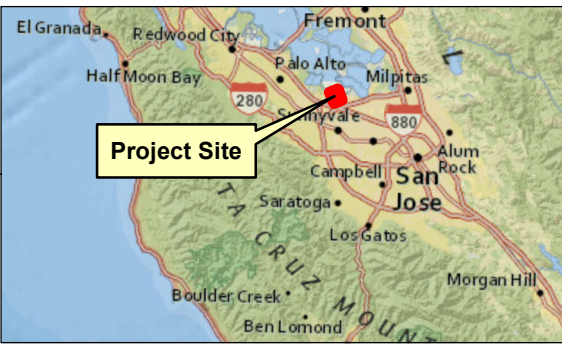
UTILITIES KEY

- Proposed Domestic Water Facilities
- Proposed High Pressure Water Facilities
- Existing Water Facilities to Remain
- Existing Water Facilities to be Decommissioned

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

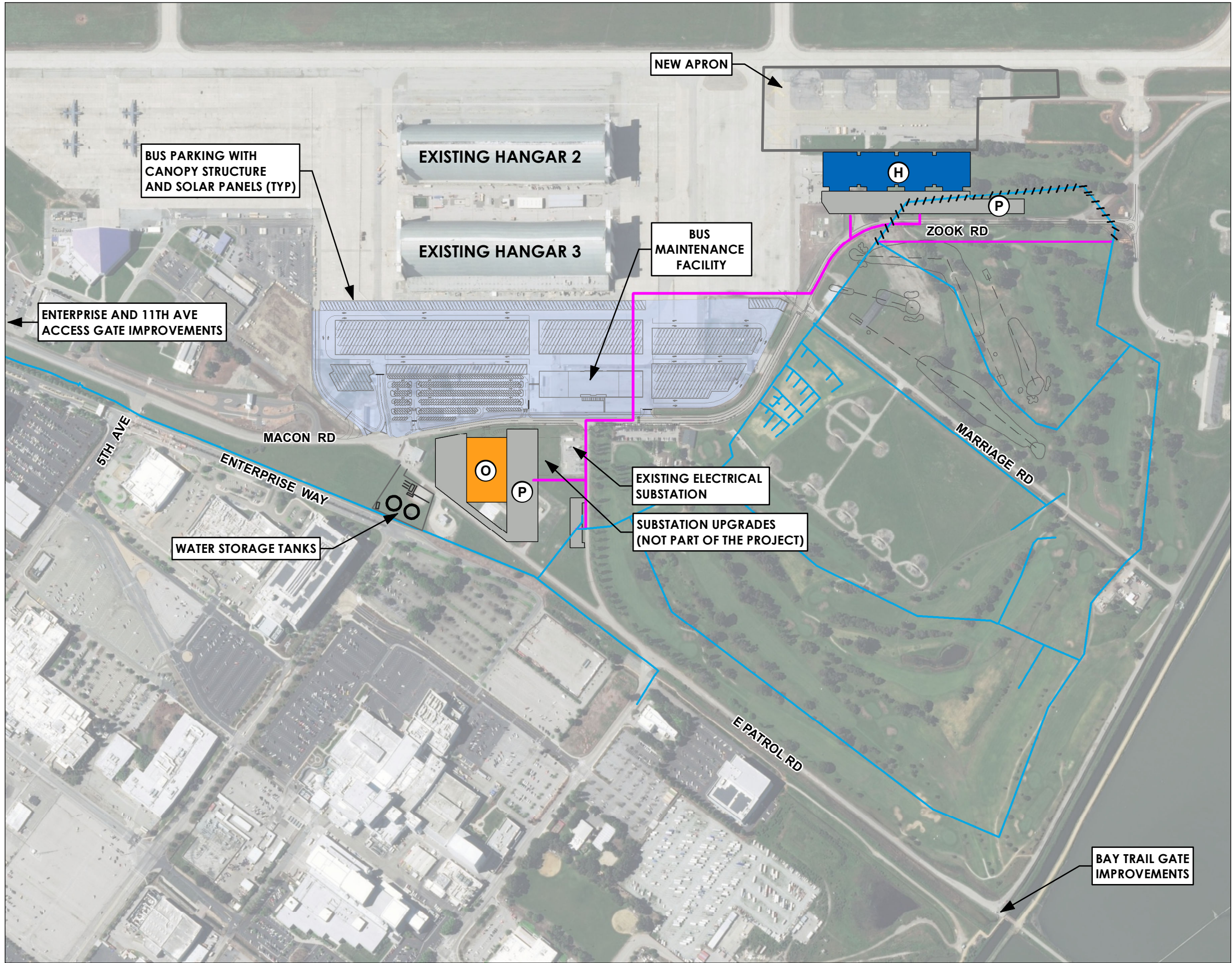
Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project
Eastside Airfield Improvements Project
Environmental Assessment

Figure No.
A-1.2

Title
Option 1 - Domestic and High Pressure Water Facilities

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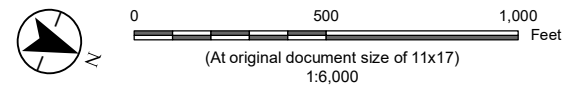
KEY

- Office Building/Alternatives
- Private Hangars
- Parking
- Bus Maintenance Facility

UTILITIES KEY

- Proposed Reclaimed Water Facilities
- Existing Reclaimed Water Facilities to Remain
- Existing Reclaimed Water Facilities to be Decommissioned

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project 181710453

Eastside Airfield Improvements Project
Section 106 Technical Report

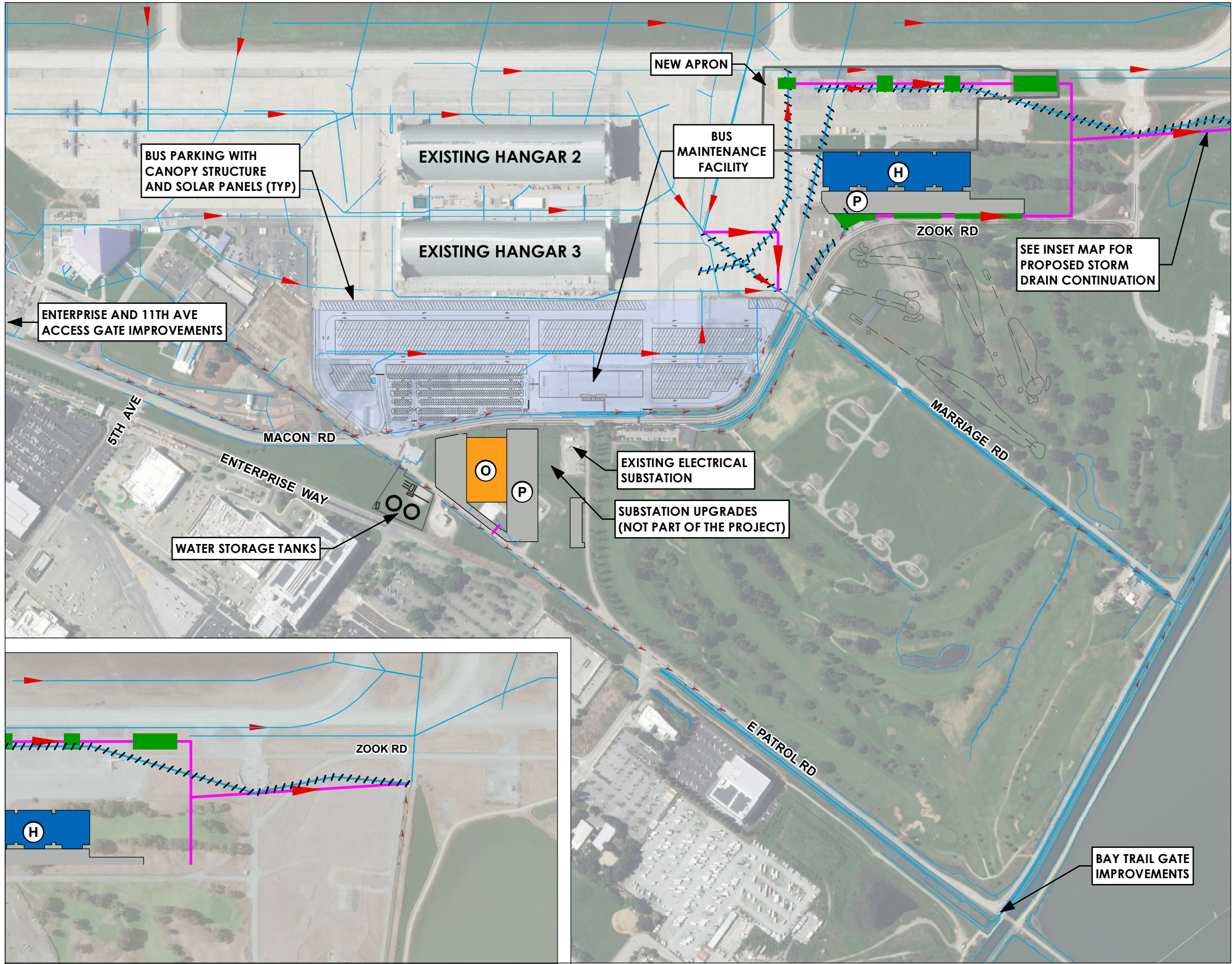
Figure No.

A-1.3

Title

option 1 - Reclaimed Water Facilities

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Revised: 2020-11-02 By: lsmith



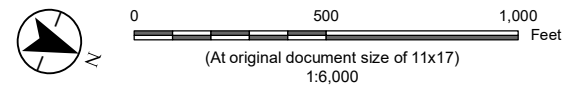
KEY

- Office Building/Alternatives
- Private Hangars
- Parking
- Bus Maintenance Facility

UTILITIES KEY

- Proposed Storm Drain Facilities
- Proposed Storm Water Treatment Facilities
- Existing Storm Drain Facilities to Remain
- Existing Storm Drain Facilities to be Decommissioned
- Flow Direction

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes

1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project 181710453

Eastside Airfield Improvements Project
Section 106 Technical Report

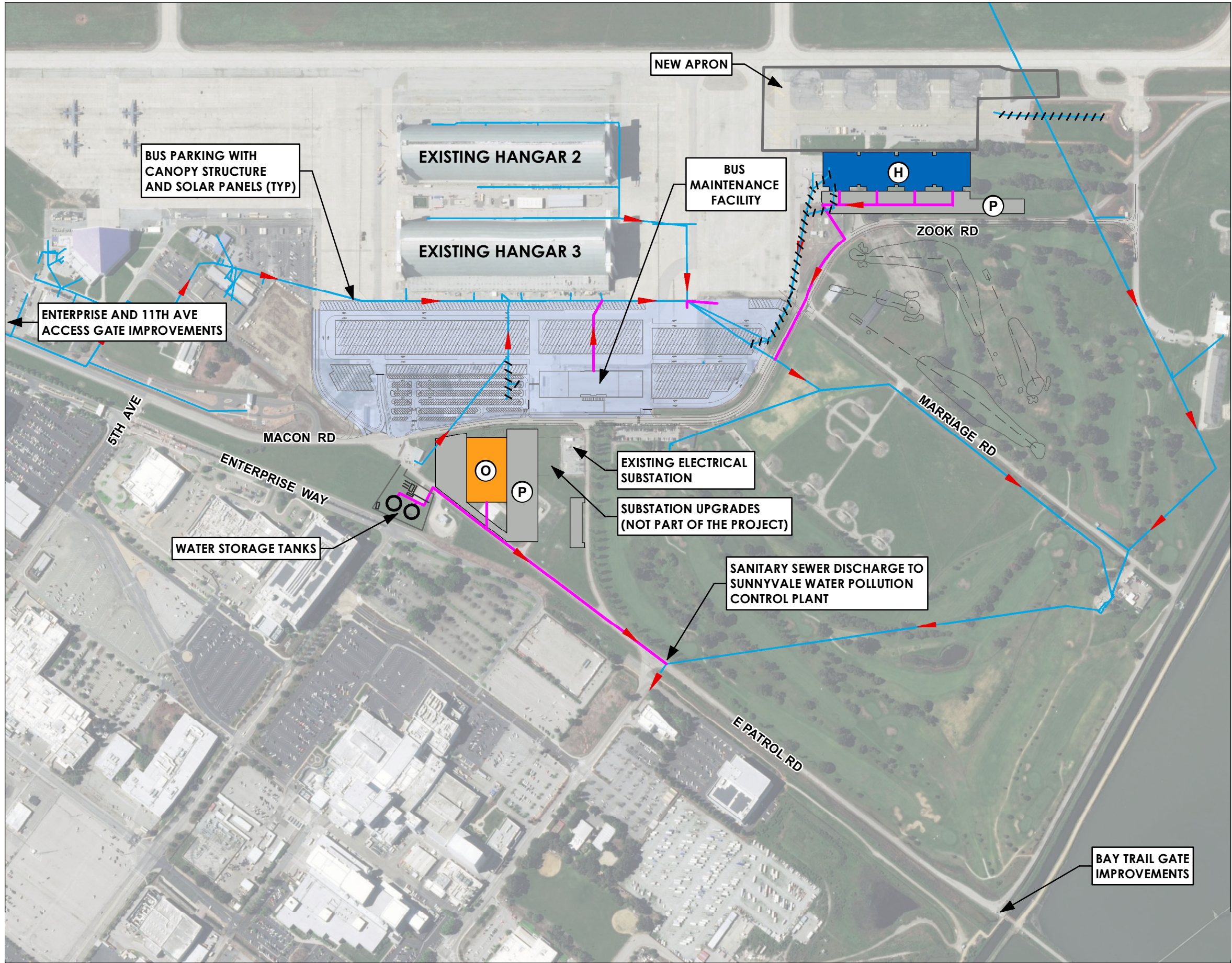
Figure No.

A-1.4

Title

Option 1 - Storm Drain and Treatment Facilities

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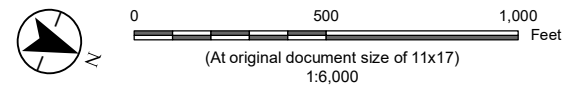
KEY

- Office Building/Alternatives
- Private Hangars
- Parking
- Bus Maintenance Facility

UTILITIES KEY

- Proposed Sanitary Sewer Facilities
- Existing Sanitary Sewer Facilities to Remain
- Existing Sanitary Sewer Facilities to be Decommissioned
- Flow Direction

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project 181710453

Eastside Airfield Improvements Project
Section 106 Technical Report

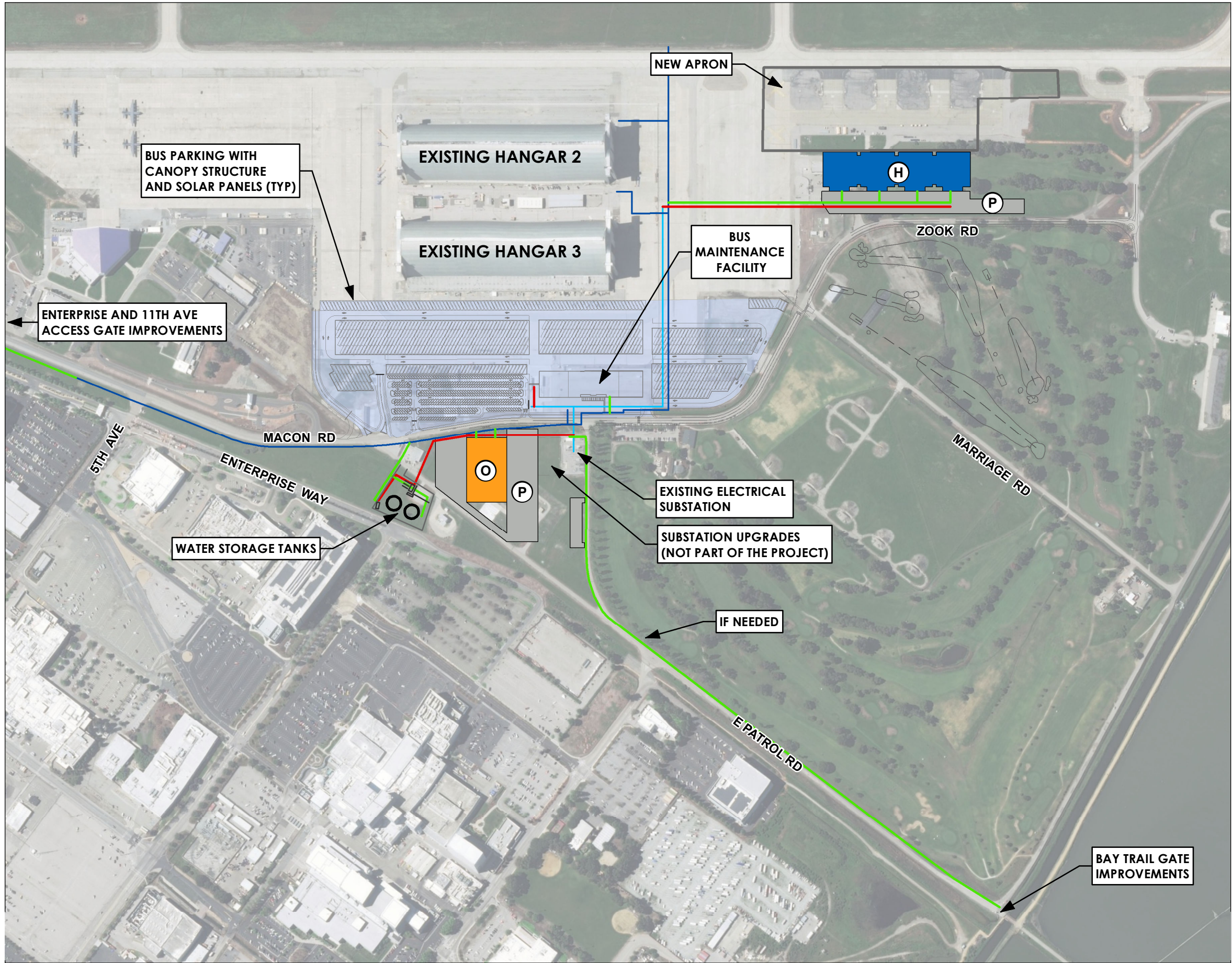
Figure No.

A-1.5

Title

Option 1 - Sanitary Sewer Facilities

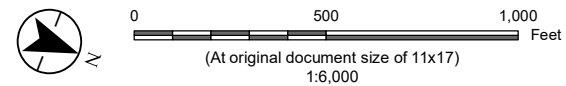
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- KEY**
- Office Building/Alternatives
 - Private Hangars
 - Parking
 - Bus Maintenance Facility

- UTILITIES KEY**
- Proposed Telecom Ductbank
 - Proposed Primary Feeder
 - Existing PVNet Ductbank
 - Existing 12KV Ductbank

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

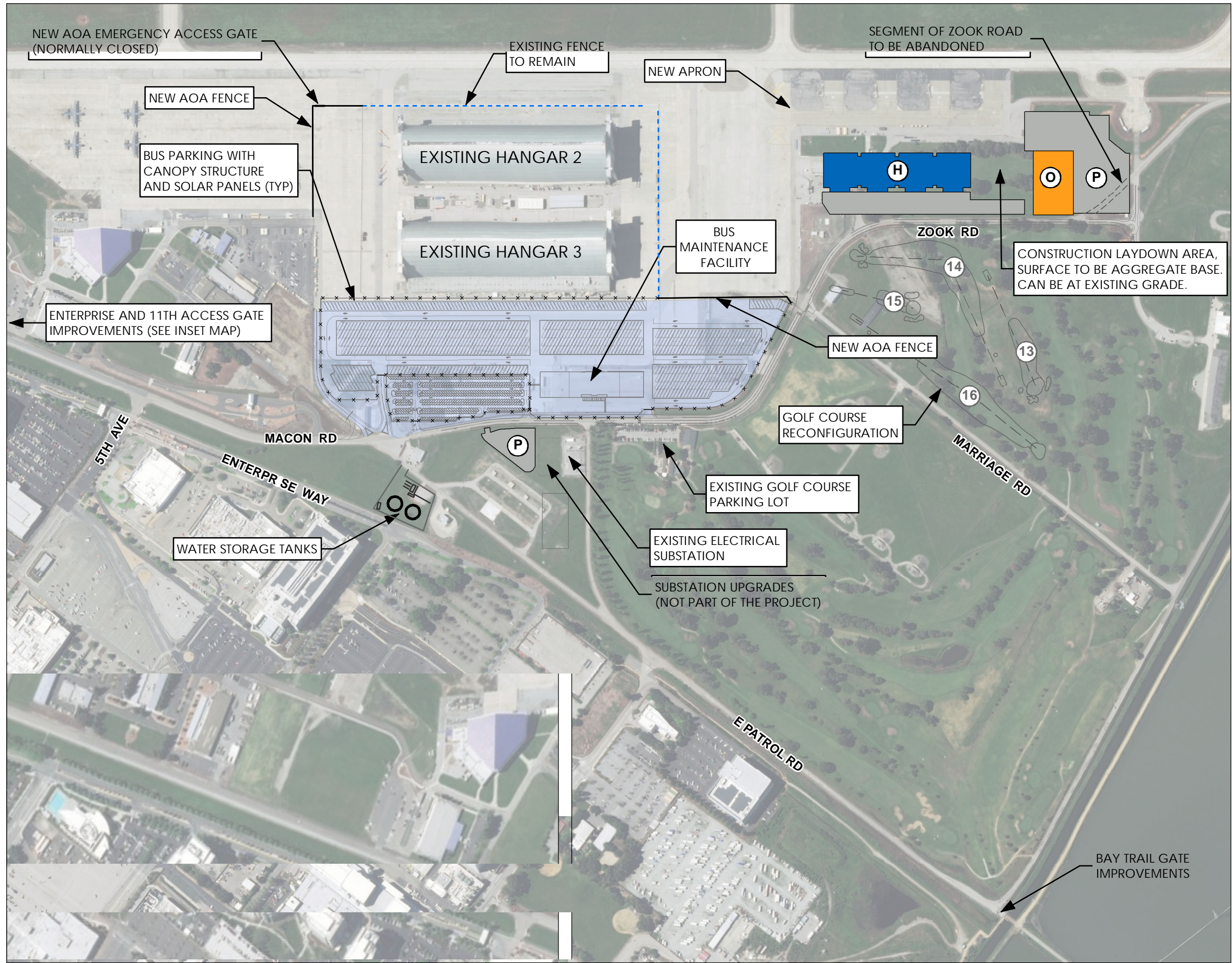
Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project
Eastside Airfield Improvements Project
Section 106 Technical Report

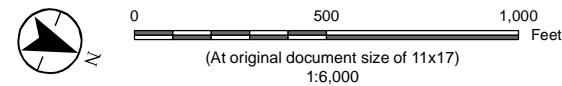
Figure No.
A-1.6

Title
Option 1 - Electrical and Telecommunications Facilities

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- KEY**
- Office Building/Alternative
 - Private Hangars
 - Parking
 - Golf course hole number
 - Bus Maintenance Facility
 - Existing Fence to Remain
 - New AOA Fence
 - Bus Maintenance Facility Fence



Resource Notes

1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

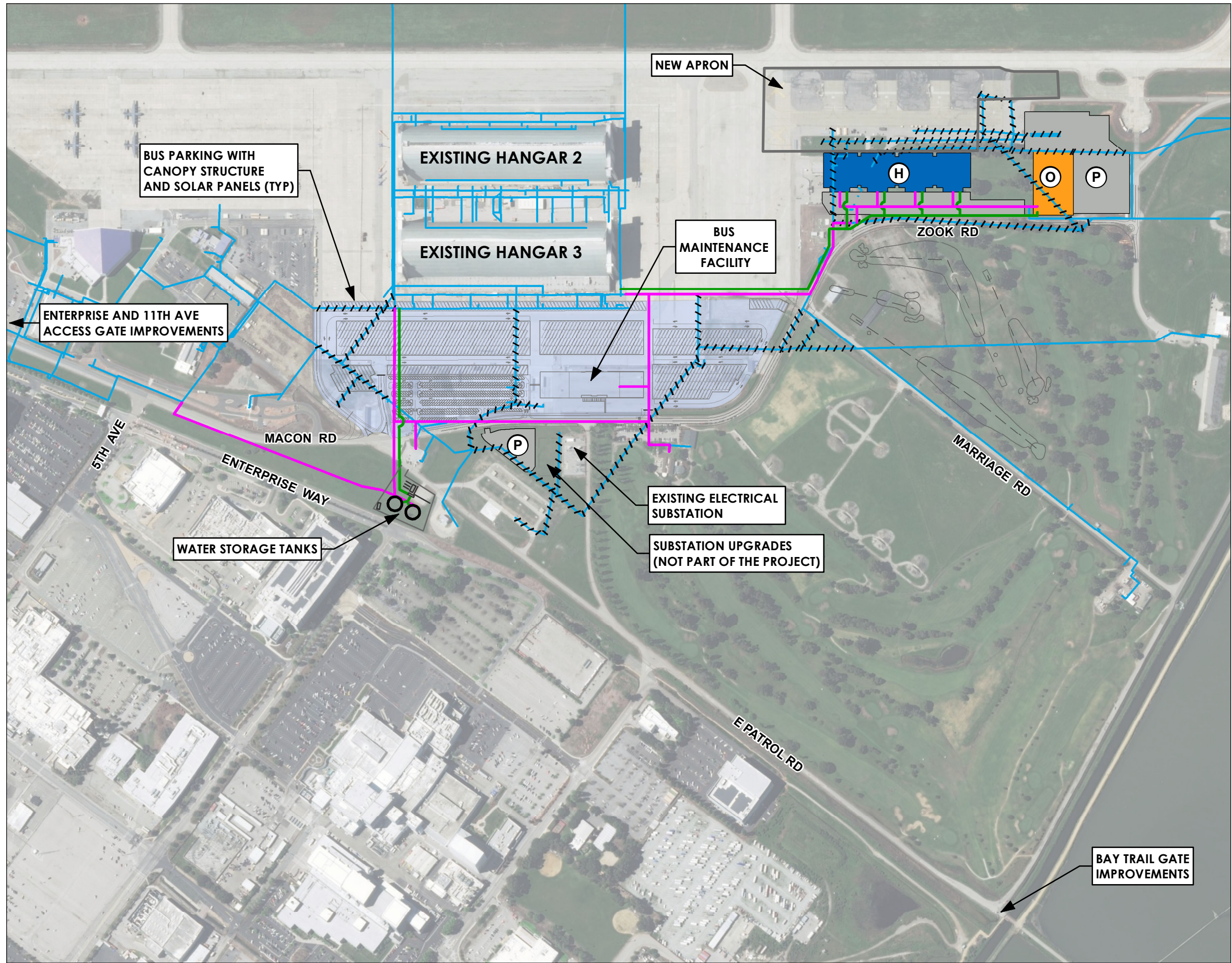
Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project
Eastside Airfield Improvements Project
Section 106 Technical Report

Figure No.
A-2.1

Title
Option 2 - Site Plan

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Revised: 2020-11-02 By: lamsmb



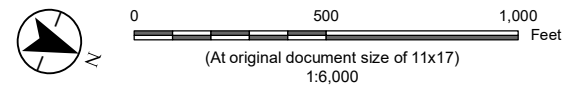
KEY

- Office Building/Alternative
- Private Hangars
- Parking
- Bus Maintenance Facility

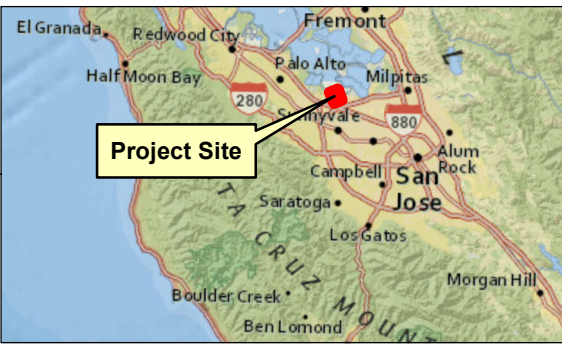
UTILITIES KEY

- Proposed Domestic Water Facilities
- Proposed High Pressure Water Facilities
- Existing Water Facilities to be Decommissioned
- Existing Water Facilities to Remain

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

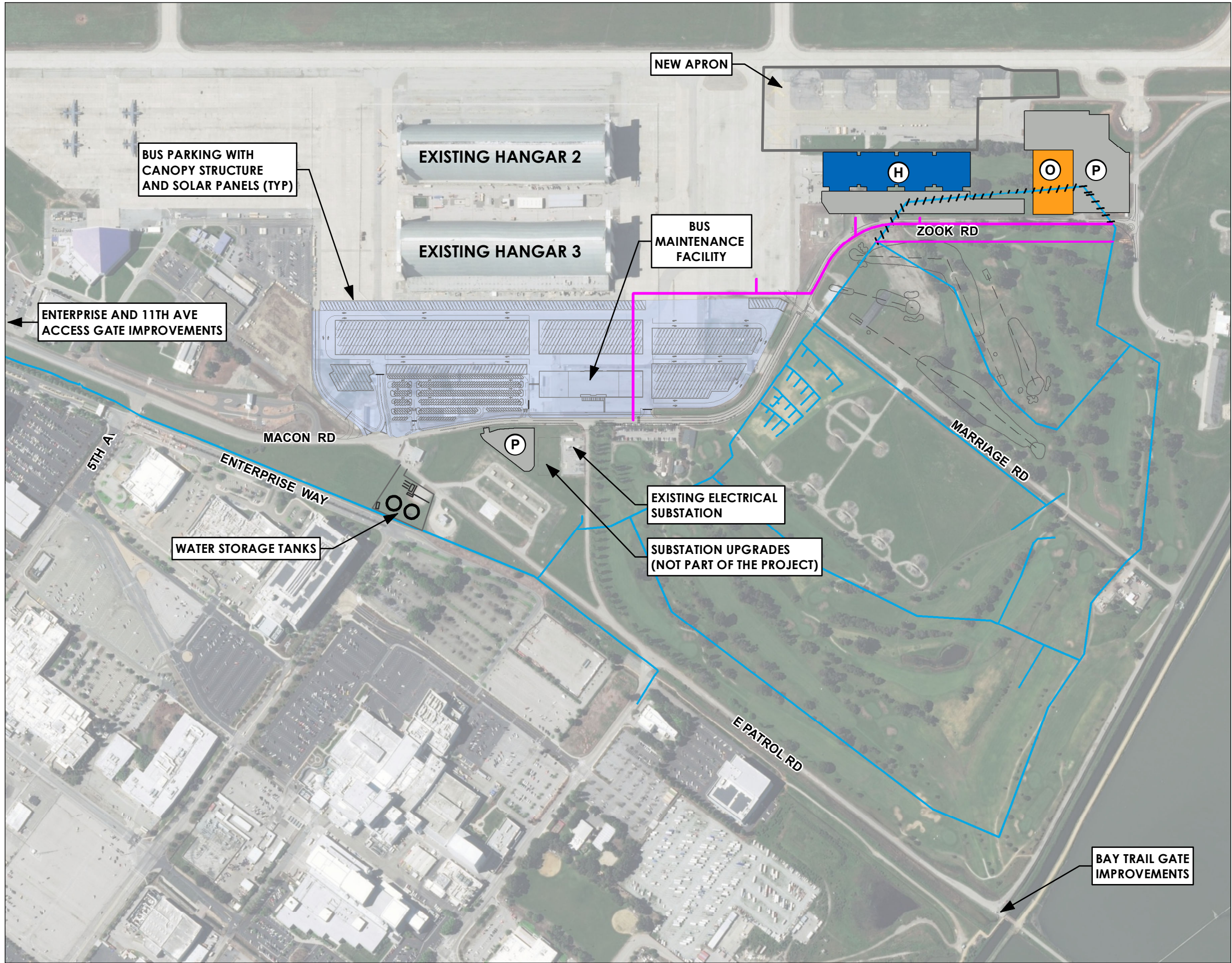
Project
Eastside Airfield Improvements
Project Section 106 Technical Report

181710453





Figure No.
A-2.2

Title
Option 2 - Domestic and High Pressure Water Facilities




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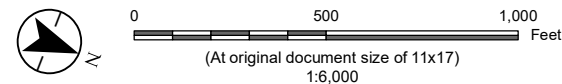
KEY

-  Office Building/Alternative
-  Private Hangars
-  Parking
-  Bus Maintenance Facility

UTILITIES KEY

-  Proposed Reclaimed Water Facilities
-  Existing Reclaimed Water Facilities to Remain
-  Existing Reclaimed Water to be Decommissioned

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes

1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project 181710453

Eastside Airfield Improvements Project
Section 106 Technical Report

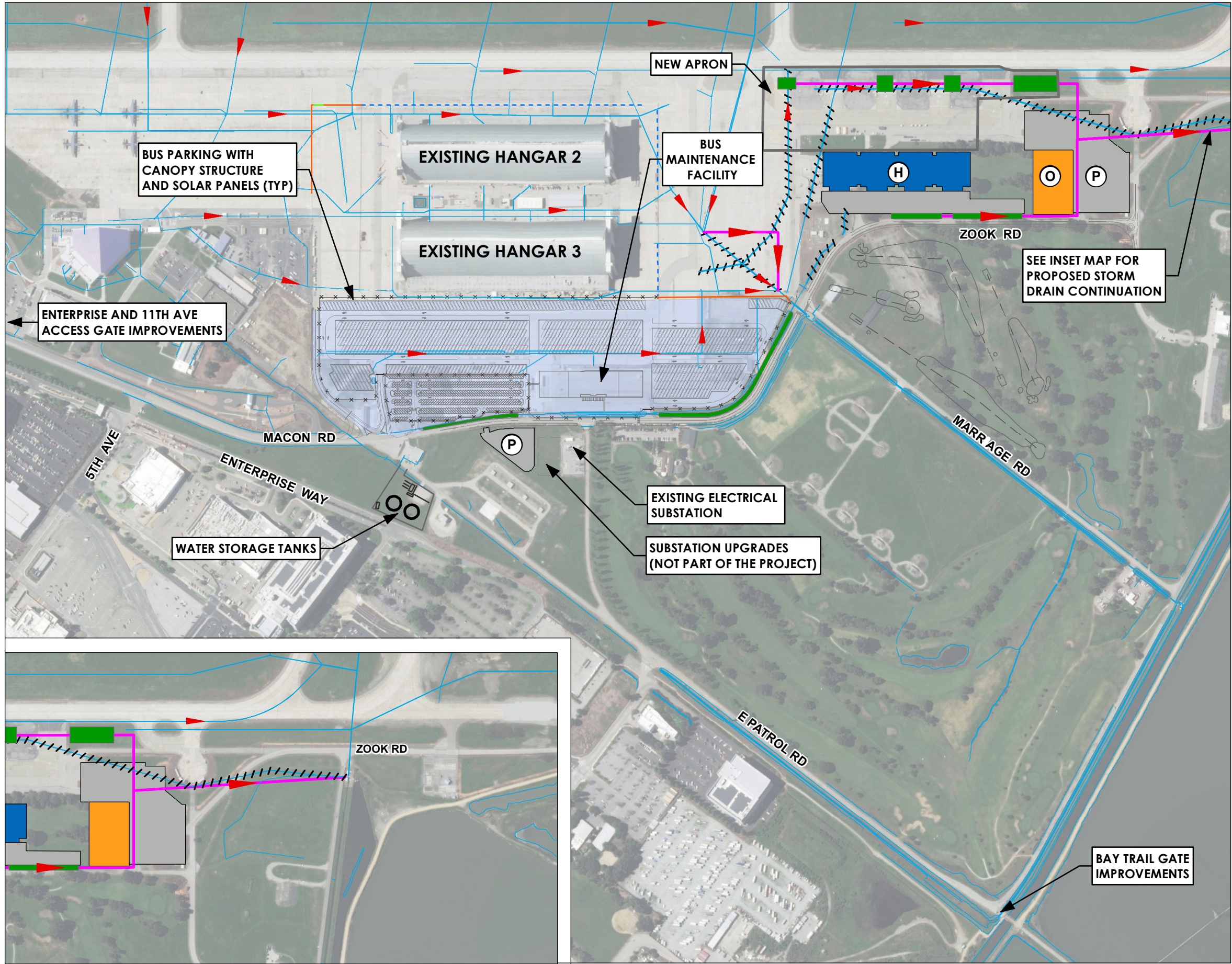
Figure No.

A-2.3

Title

Option 2 - Reclaimed Water Facilities

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Revised: 2020-11-02 By: lsmith



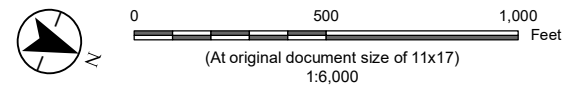
KEY

- Office Building/Alternative
- Private Hangars
- Parking
- Bus Maintenance Facility

UTILITIES KEY

- Proposed Storm Drain Facilities
- Proposed Stormwater Treatment Facilities
- Existing Storm Drain Facilities to Remain
- Existing Storm Drain Facilities to be Decommissioned
- Flow Direction

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

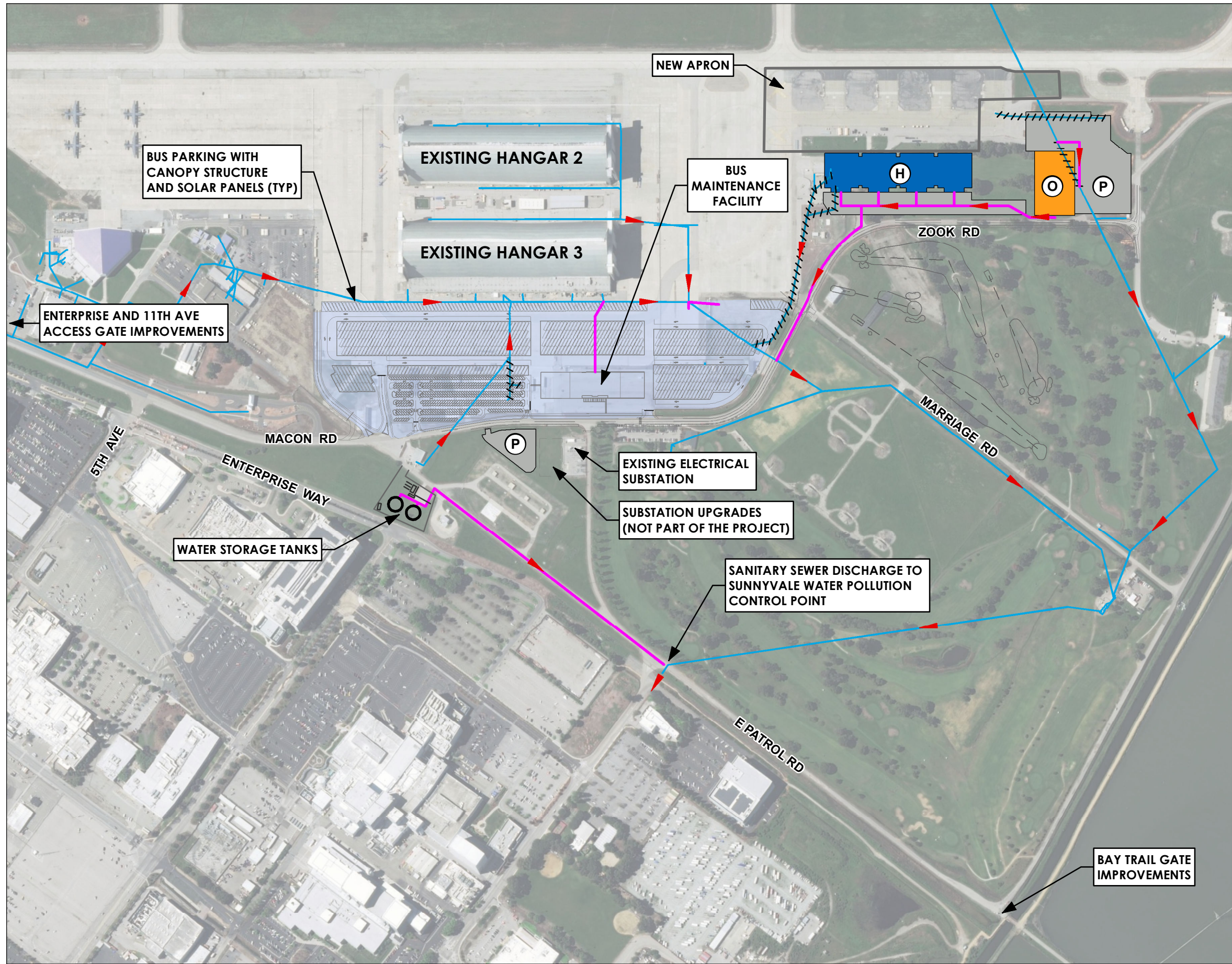
Project
Eastside Airfield Improvements Project
Section 106 Technical Report

181710453

Figure No.
A-2.4

Title
Option 2 - Storm Drain and Treatment Facilities

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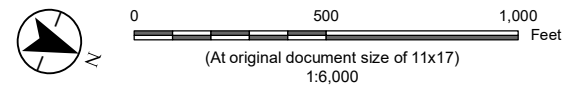
KEY

- Office Building/Alternative
- Private Hangars
- Parking
- Bus Maintenance Facility

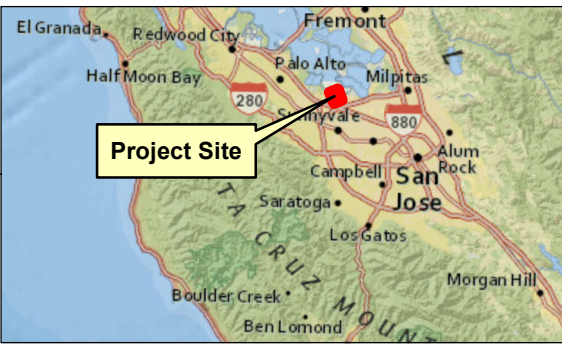
UTILITIES KEY

- Proposed Sanitary Sewer Facilities
- Existing Sanitary Sewer Facilities to Remain
- Existing Sanitary Sewer Facilities to be Decommissioned
- Flow Direction

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources: CAD Drawings - Conceptual
3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project 181710453

Eastside Airfield Improvements Project
Section 106 Technical Report

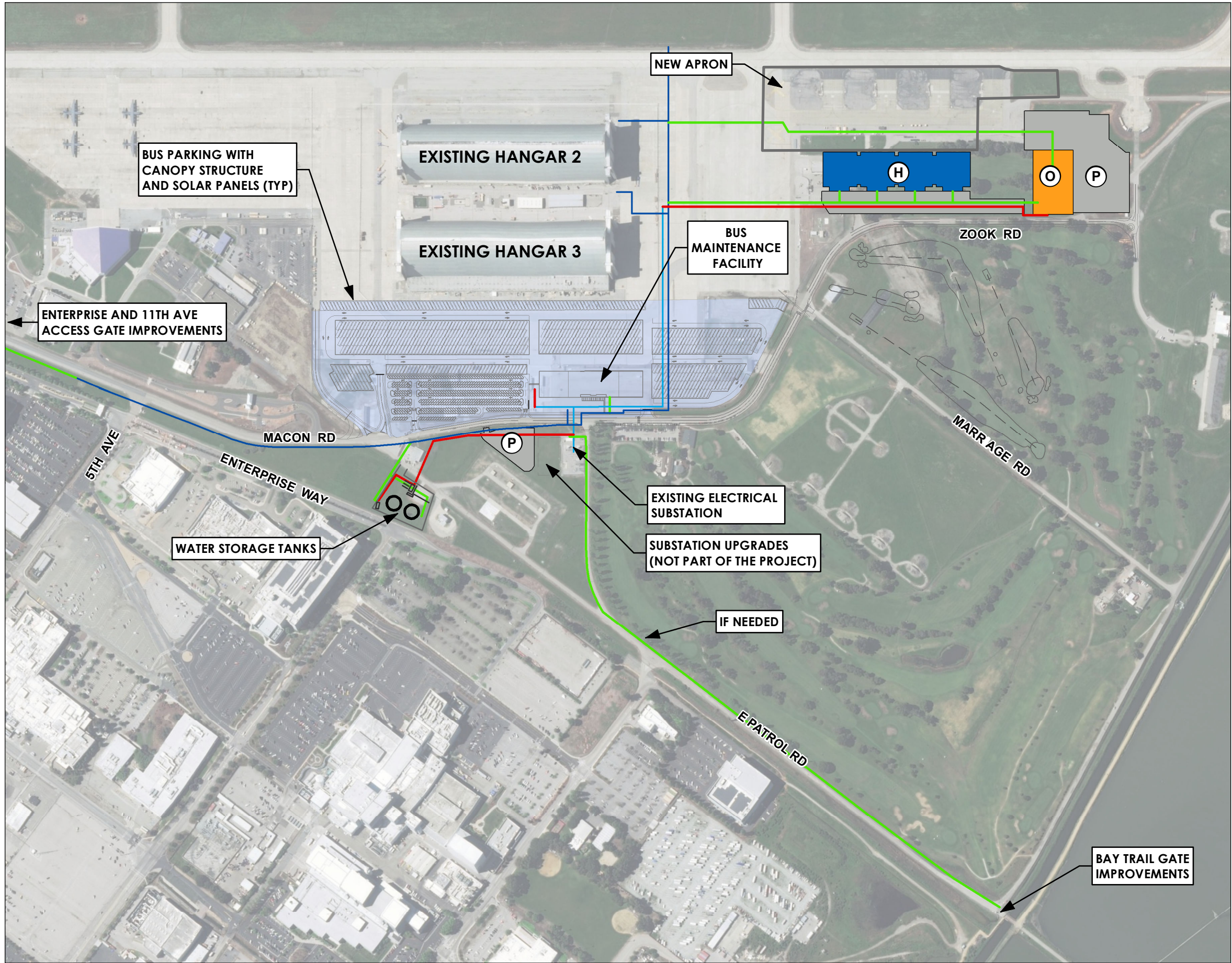
Figure No.

A-2.5





Title

Option 2 - Sanitary Sewer Facilities





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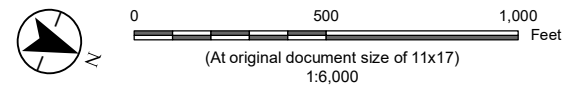
KEY

-  Office Building/Alternative
-  Private Hangars
-  Parking
-  Bus Maintenance Facility

UTILITIES KEY

-  Proposed Primary Feeder
-  Proposed Telecom Ductbank
-  Existing PVNet Ductbank
-  Existing 12KV Ductbank

Note: Utilities shown on this figure are diagrammatic in nature and intended to show general backbone utility concepts for the purposes of comparing impacts from proposed project alternatives.



Resource Notes
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
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3. Background: National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.



Project Location
Moffett Federal Airfield
Santa Clara County, CA

Prepared by CP/LS on 2020-10-29
TR by TG on 2020-10-29
IR Review by SL on 2020-10-29

Project 181710453

Eastside Airfield Improvements Project
Section 106 Technical Report

Figure No.

A-2.6

Title

**Option 2 - Electrical and
Telecommunications Facilities**

MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

Appendix B Massing Simulations
January 15, 2021

Appendix B Massing Simulations



Figure 1: Existing conditions at Eastside of MFA, looking northeast.



Figure 2: Proposed Alternative 1 project components at Eastside of MFA, looking northeast.



Figure 3: Proposed Alternative 2 project components at Eastside of MFA, looking northeast.



Figure 4: Existing conditions at airfield, looking east towards Hangar 2 from Hangar 1



Figure 5: Proposed conditions under Alternatives 1 and 2 at airfield, looking east towards Hangar 2 from Hangar 1



Figure 6: Existing conditions at airfield, looking northeast from Hangar 1



Figure 7: Proposed massing under Alternatives 1 at airfield, looking northeast from Hangar 1



Figure 8: Proposed massing under Alternatives 2 at airfield, looking northeast from Hangar 1



Figure 9: Existing conditions at airfield, looking northeast towards Hangars 2 and 3 from the southeast corner of the runways.



Figure 10: Proposed massing under Alternative 1, looking northeast towards Hangars 2 and 3 from the southeast corner of the runways.



Figure 11: Existing conditions at airfield, looking north towards Hangars 2 and 3 from the southeast corner of the runways.



Figure 12: Proposed massing under Alternatives 2 at airfield, looking north from the southeast corner of the runway



Figure 13: Existing conditions at the northeast corner of the airfield, looking south towards the Naval Storage Depot, High Explosive Magazines, and Hangar 3.



Figure 14: Proposed massing under Alternative 1 at the northeast corner of the airfield, looking south towards the High Explosive Magazines and Hangar 3.



Figure 15: Existing conditions at the northeast corner of the airfield, looking southwest towards the High Explosive Magazines (left), Hangar 3, and Hangar 2.



Figure 16: Proposed massing under Alternatives 1 and 2, looking southwest towards the Naval Storage Depot with High Explosive Magazines (left), Hangar 3, and Hangar 2.



Figure 17: Existing conditions at the northeast corner of the airfield, looking southeast from the north end of the runways towards Hangars 2 and 3.



Figure 18: Proposed massing under Alternatives 1, looking southeast from the north end of the runways towards Hangars 2 and 3.



Figure 19: Proposed massing under Alternatives 2, looking southeast from the north end of the runways towards Hangars 2 and 3.

MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

Appendix C DPR 523 Forms
January 15, 2021

Appendix C DPR 523 Forms



State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #

HRI #

Trinomial

NRHP Status Code 6Z

Other Listings _____

Review Code _____

Reviewer _____

Date _____

Page 1 of 9

*Resource Name or #: (Assigned by recorder) Moffett Field Building 511

P1. Other Identifier: _____

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Santa Clara County

and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad Mountain View, Calif. Date 1991 T 6S ; R 2W Sec Unsectioned M.D. B.M.

c. Address Marriage Road City Mountain View, Calif. Zip 94035

d. UTM: (Give more than one for large and/or linear resources) 10S 584620 mE/ 4142020 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)

Building 511 is located at the northeast corner of the intersection of Zook Road and Marriage Road within the National Aeronautics and Space Administration Ames Research Center (NASA ARC). It is located at the northeastern portion of the property, more commonly known as Eastside/Airfield area at Moffett Federal Airfield (MFA). The federally owned property is located in Santa Clara County between the cities of Mountain View and Sunnyvale, California. APN 116-18-012

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 511 is a simple, pre-fabricated steel building previously used to store weapons for the California Air National Guard (CAANG). The building is located on the eastside of Moffett Federal Airfield (MFA) and is largely surrounded by the open area of the Moffett Field Golf Course. The building is sited on a slight gravel berm and accessible from a driveway on the west side of Marriage Road (**Photograph 1**) (see Continuation Sheet).

*P3b.Resource Attributes: (List attributes and codes) HP34 – Military Property

*P4.Resources Present: ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (view, date, accession #) Photograph 1: South and west elevations of Building 511, looking north

(Stantec, March 5, 2019)

P5a



Photograph 1.

*P6. Date Constructed/Age and Source:

☒ Historic ☐ Prehistoric ☐ Both

Constructed ca.1968.

*P7. Owner and Address:

National Aeronautics and Space Administration
300 E. Street SW, Suite 5R30
Washington, DC 20546

*P8. Recorded by: (Name, affiliation, and address)

Daniel Herrick and Rebecca Riggs
Stantec, Inc.
555 Capitol Mall, Suite 650
Sacramento, CA 95814

*P9. Date Recorded: March 5, 2019

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.")

Stantec Consulting Services, Inc., "MFA Eastside
Airfield New Project Section 106 Technical
Report" prepared for NASA Ames Research

Center Historic Preservation Office (January 2021). *Attachments: ☐ NONE ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*Resource Name or # (Assigned by recorder) Moffett Field Building 511

*NRHP Status Code 6Z

Page 2 of 9

B1. Historic Name: Moffett Federal Airfield Building 511, Weapons Station

B2. Common Name: Building 511

B3. Original Use: Missile Integration Facility B4. Present Use: AIMD Weapons Station

*B5. Architectural Style: Utilitarian

*B6. Construction History: (Construction date, alterations, and date of alterations) Constructed ca. 1968.

*B7. Moved? ☒ No ☐ Yes ☐ Unknown Date: _____ Original Location: _____

*B8. Related Features: none

B9a. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme n/a Area n/a

Period of Significance n/a Property Type n/a Applicable Criteria n/a (Discuss importance in terms of historical or architectural

This intensive survey and evaluation find that MFA Building 511 does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) because of a lack of significance. The property has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the California Environmental Quality Act Guidelines (CEQA), using the criteria outlined in Section 5024.1 of the California Public Resources Code and does not appear to be a historical resource for the purpose of CEQA (see continuation sheet).

B11. Additional Resource
Attributes: (List attributes and codes)

*B12. References: See footnotes

B13. Remarks:

*B14. Evaluator: Daniel Herrick
and Rebecca Riggs, Stantec
Inc.

*Date of Evaluation: March 2019

Sketch Map: Historic Properties Map of NASA ARC with Building 511 identified by arrow; north is up (NASA ARC, Historic Preservation Office).



CONTINUATION SHEET

Property Name: Moffett Field Building 511

Page 3 of 9

P3a. Description (Continued):

Building 511 is a rectangular shaped, pre-fabricated steel building. It is similar in design to a Butler building with a low-pitch, front gable roof (**Photograph 2**). There are large steel sliding doors on the east and west elevations of the building; there is also a door with a window located next to the sliding doors on the east elevation (**Photograph 3**). There are eight sliding windows on the building, four on the north elevation and four on the south. Beneath the windows there are metal air vents, three on the north elevation and three on the south (**Photograph 4**). The building is surrounded by chain-link fencing.

B10. Significance (Continued):

Historic Context

The land on which NASA ARC is located was originally part of the Rancho Posolmi Mexican land grant and has been in continuous use since 1844. Use of the land as agricultural fields for cattle grazing continued until the U.S. Navy expressed interest in developing the land as an airfield. They acquired the land and established Naval Air Station (NAS) Sunnyvale on August 2, 1931. Planned as an airfield for the Navy's dirigible program, Hangar 1 and the campus around it, including two small runways, were completed in 1933. The Navy used the facilities until they terminated their dirigible program in 1935 and transferred the airfield to the U.S. Army Air Corps, who enlarged the runways and used the site as their West Coast training headquarters until 1942. During this time, a portion of the property was also used by the National Advisory Committee for Aeronautics (NACA), who built the Ames Aeronautical Laboratory in 1939, including hangars and wind tunnels for research and testing. Following the bombing of Pearl Harbor, the Navy retook the facility and renamed it NAS Moffett Field. During the war they used it as the base for airships that patrolled the Pacific Coast and as a training center for airship pilots and also constructed Hangars 2 and 3 in 1943. During World War II, they expanded, purchasing 225 acres of land east of the airfield and enlarging the runways again. They continued enhancing the airfield in the post-war era, elongating the runways for newer, larger aircraft.

After World War II, Moffett Field continued operations as a Naval Air Transport Service base, with the addition of being a Helicopter Overhaul and Repair base in 1948. By 1949, Moffett Field was designated as an overall Military Air Transport Service base, becoming the largest Naval supported air transport base on the West Coast. Tensions over the growth of Communism reached their zenith in 1950 with the outbreak of the Korean War, and Moffett Field became a jet base for Navy aircraft carriers, housing F-3D Skynight, F2H-1, and F2H-2 Banshee aircraft. To meet these new responsibilities and accommodate the 300 aircraft stationed at Moffett Field, the Navy undertook the construction of new facilities. This included a new aircraft fueling system, a variety of machine and maintenance shops, an operations building and control tower, ammunition storage, and new barracks.¹

With the onset of the Korean War in 1950, Moffett Field was used to train jet pilots and as the home base for Navy fighter jets and the facilities at the airfield were expanded again, with new buildings constructed

¹ Alexandra Cole, "Inventory and Evaluation of Cold War Era Historical Resources: Moffett Federal Airfield," prepared for NASA, prepared by SAIC (March 1999), 19.

CONTINUATION SHEET

Property Name: Moffett Field Building 511
Page 4 of 9

around the perimeter of the property and both runways extended. By 1962, operations at Moffett Field were switched from jet to experimental antisubmarine aircraft.

Use of Moffett for training operations continued until 1994 when it was closed to military operations and the property was transferred in its entirety to NASA (formerly NACA) for use as an experimental test site. Moffett Field's primary purpose turned to advancing airborne science and technology, including space travel. After the full transfer of the field to NASA, a portion of it including hangars and munitions storage areas was utilized by the California Air National Guard (CANG) 129th Rescue Wing.²

Moffett Field in the Cold War-Era

Although World War II ended in 1945, it gave way to an ideological conflict between the U.S. and the Union of Soviet Socialist Republics (USSR) that extended into the late 1980s. Known as the Cold War, it was a period of secrecy and hostility between two of the world's superpowers, resulting in a nuclear arms race and worldwide struggle between the powers of democracy and Communism. As a direct result of this, both the U.S. and the USSR began developing nuclear weapons manufacturing and militarization. Tensions between the two countries ran high, especially during the 1950s when a series of invasions and exclusive economic treaties took place. During this time, the U.S. Department of Defense believed the best way to prevent a nuclear attack would be to have a large store of nuclear weapons with which to retaliate against any Soviet attacks. These weapons were based on land, air, and sea, called the strategic nuclear deterrence triad, to provide different tactical vantage points in case of deployment. Air Force bombers were equipped with nuclear missiles, as were Navy submarines, which patrolled the Soviet coast for the duration of the Cold War. With the onset of hostilities after World War II, Moffett Field became an important base for Naval operations during the Cold War.³

In 1962, in support of these larger Cold War operations of the U.S. Navy, MFA was designated the west coast center of operations for the newly developed anti-submarine mission. This mission was centered on the Lockheed P-3 Orion, which was a turbo-prop patrol aircraft that was specifically designed for maritime surveillance; it features a distinctly elongated tail that housed the equipment used to detect submarines. The P-3 Orion mission at MFA would continue to be the predominant mission at the airfield over the following decades.⁴

During the initial decade of operation at MFA, the P-3 mission grew to include over eight squadrons of aircrafts. These operations utilized many of the pre-existing buildings and structures at MFA that were constructed during the previous missions at the property. The squadrons and their maintenance operations were largely housed in Hangars 2 and 3 at the eastside of the airfield, while Hangar 1 was largely used for training purposes. Some purpose-built buildings and structures were constructed to facilitate key operations of the P-3 Orion mission, including a complex of administrative and operations facilities at the eastern side of the airfield. This included the construction of an administration building (Building 300; demolished), a

² AECOM, "Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California," prepared for NASA Ames Research Center (November 26, 2013), 3-2 – 3-7.

³ Alexandra Cole, "Inventory and Evaluation of Cold War Era Historical Resources," 15-18.

⁴ Cole, "Inventory and Evaluation of Cold War Era Historical Resources," 25-27.

CONTINUATION SHEET

Property Name: Moffett Field Building 511
Page 5 of 9

communications/classroom building (Building 654), and a base operations and communications building (Building 656), and an avionics shop (Building 650). Other secondary and tertiary structures were also constructed in support of the P-3 Orion mission, but were largely used as general office, storage space, and for munitions.⁵

Following the realignment of MFA in 1994, the buildings that largely supported the P-3 Orion were transferred from the US Navy to NASA, who in turn leased these facilities to CAANG. CAANG continues to operate many of these buildings and structures today.

Property History

Building 511 was erected in its current location ca.1968 as the Missile Integration Facility, which was used in the assembly of munitions in support of the P-3 Orion Anti-Submarine mission at MFA (**Figure 1 & Figure 2**). This entailed taking standardized weapons components – nose cone, body, and fins – and assembling them into the bombs and missiles used in the mission. The building appears to have operated in this capacity from its construction ca.1968 until 1994, when the P-3 Orion mission was ended at MFA. Since then, the CAANG has been operating the building in support of its mission at MFA.



Figure 1: March 1968 Aerial Photograph of the eastside area of MFA prior to construction of Building 511 (circled), looking southwest.⁶



Figure 2: May 1977 Aerial Photograph of the Eastside area of MFA with Building 511 (circled); north is up.⁷

⁵ Cole, "Inventory and Evaluation of Cold War Era Historical Resources," 33-37.

⁶ Moffett Field Historical Society, Aerial Photograph Collection, "AH0509-27" (March 18, 1968).

⁷ Moffett Field Historical Society, Aerial Photograph Collection, "A77-0864-10" (May 13, 1977).

CONTINUATION SHEET

Property Name: Moffett Field Building 511

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Evaluation

Building 511 was evaluated in 1999 as part of the Cold War Survey under Criteria Consideration G and found not to exhibit exceptional historical significance. The building was noted as having associations with the P-3 Orion Anti-Submarine mission as a weapons assembly facility, however, this is a secondary support function of the mission. Constructed ca.1968, the building is now older than 50 years; the property requires additional evaluation per the NRHP significance criteria for potential eligibility

NRHP Evaluation

The property is a standard building in terms of Naval design and functionality. While the nationwide P-3 Orion Anti-Submarine Mission, operated in part at MFA from 1962-1994, is identified as having national significance, buildings most associated with this mission include Hangars 1, 2, and 3, where the aircraft were housed, and maintenance occurred. Additional structures that are integrally associated with the mission include the mission administration building (Building 300; demolished) and the Communications Building (Building 656), all of which had essential functions within the P-3 Orion program at MFA. As a weapons assembly and storage facility, Building 511 had a related, support function to the mission, but this is secondary in use and was not an essential and integral component to the mission. Additionally, weapons assembly facilities are typical to Naval airfields and does not rise to a level of significance in relation to the national significance of the P-3 Orion Mission, particularly at MFA. As such, it does not have a direct, significant association with the mission and does not rise to a level of significance under Criteria A.

As a typical Navy building, Building 511 does not appear to have any associations with specific individuals significant in history, and does not appear to exhibit significance under Criteria B.

In terms of architecture, Building 511 is a simple pre-fabricated Naval structure, typical of Navy installations throughout the US. It does not appear to exhibit any distinctive typological characteristics, method of construction, nor possess high artistic values. Additionally, it does not represent the work of a master architect, and does not exhibit significance under Criteria C.

Similarly, Building 511 is a relatively new and common property type and is unlikely to yield important information related to history or prehistory, and does not appear to exhibit significance under Criteria D.

Building 511 was constructed outside the period of significance of the expanded NAS Sunnyvale Historic District, which spans from 1930-1961, and does not qualify as a contributing property.

Historical Integrity

Building 511 does retain integrity of location, design, setting, materials, workmanship, feeling, and association. The building is in the same location, with the same setting, no changes in materials, workmanship, feeling, or association. Any alterations made to the building were not made to character defining features. Despite the high level of integrity, the building lacks significance under all criterion and is therefore not eligible for the NRHP. Therefore, it does not qualify as a historic property for the purposes of Section 106 Consultation.

CONTINUATION SHEET

Property Name: Moffett Field Building 511
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P5. Photographs (Continued):



Photograph 2: West and South elevation of Building 511, looking northeast from Zook Road.

CONTINUATION SHEET

Property Name: Moffett Field Building 511
Page 8 of 9



Photograph 3: East elevation of Building 511 with sliding metal doors, looking northeast.



Photograph 4: South elevation of Building 511, looking north.

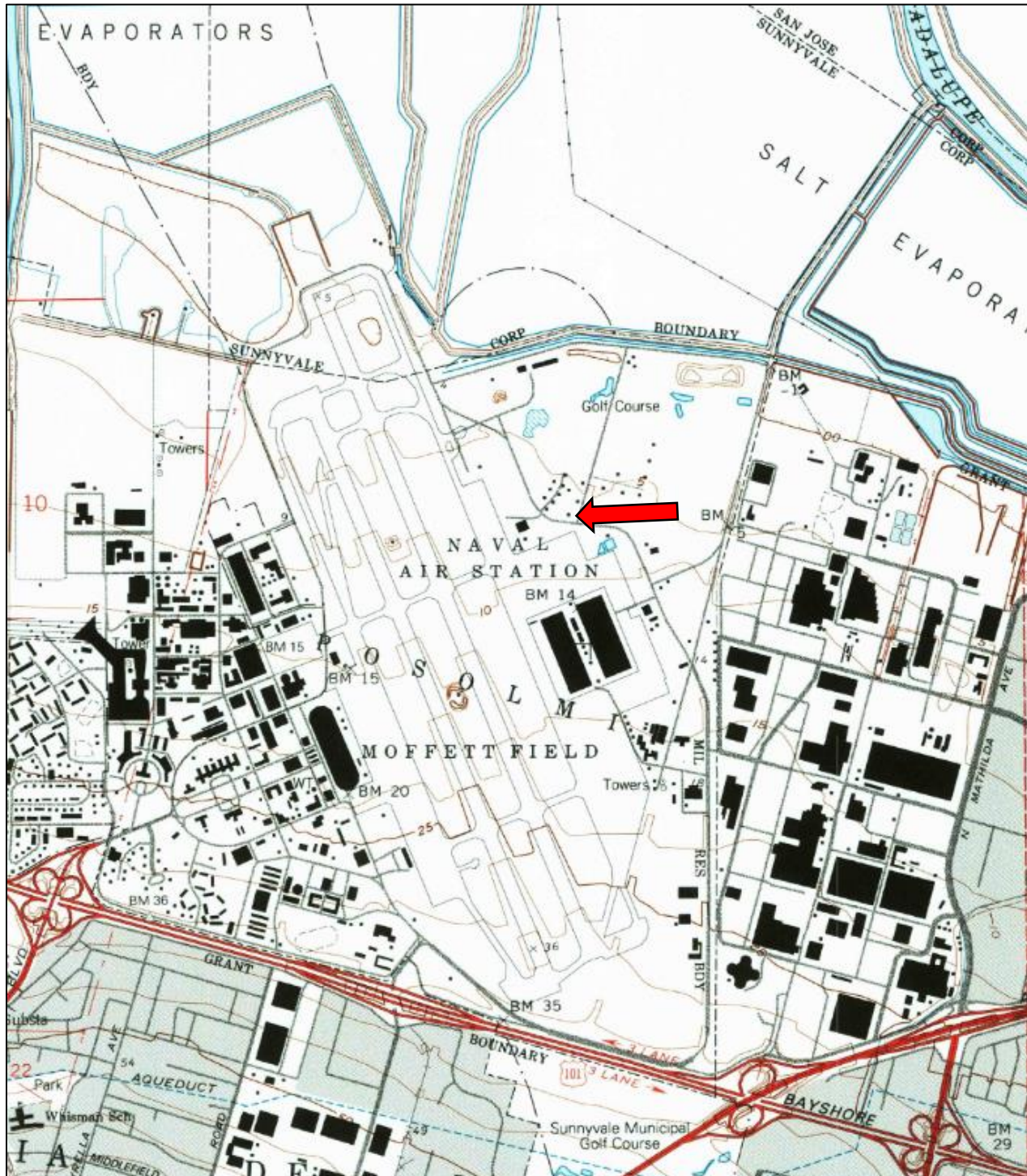
State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
LOCATION MAP

Primary#
HRI#
Trinomial

Page 9 of 9

*Resource Name or # (Assigned by recorder) Moffett Field Building 511

*Map Name: USGS Topo Map, Mountain View, CA *Scale: 1:24,000 *Date of map: 1991



State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #

HRI #

Trinomial

NRHP Status Code 6Z

Other Listings _____

Review Code _____

Reviewer _____

Date _____

Page 1 of 17

*Resource Name or #: (Assigned by recorder) Moffett Field Golf Course

P1. Other Identifier: _____

*P2. Location: ☐ Not for Publication ☒ Unrestricted *a. County Santa Clara County

and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary.)

b. USGS 7.5' Quad Mountain View, Calif. Date 1991 T 6S; R 2W Sec Unsectioned M.D. B.M.

c. Address 934 Macon Road City Moffett Field, California Zip 94035

d. UTM: (Give more than one for large and/or linear resources) 10S 584620 mE/ 4142020 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, decimal degrees, etc., as appropriate)

The Moffett Field Golf Course is located at the northeast corner of the National Aeronautics and Space Administration Ames Research Center (NASA ARC). It is located at the northeastern portion of the property, more commonly known as Eastside/ Airfield area at Moffett Federal Airfield (MFA). The property, which federally owned, is located in Santa Clara County between the cities of Mountain View and Sunnyvale, California. APN 116-18-012

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Moffett Field Golf Course is an 18-hole, par 72 golf course, located at the northeastern corner of MFA, north of Hangars 2 and 3. The golf course is bounded by the NASA ARC property line and the Lockheed Martin Missile and Space Division Campus to the east, San Francisco Bay to the North, the airfield at MFA to the west, and Macon Road to the south. The course has a relatively flat topography and is defined by the open expanses (**Photograph 1**) (see Continuation Sheet).

*P3b.Resource Attributes: (List attributes and codes) HP34 – Military Property

*P4. Resources Present: ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5a Photograph 1.



P5b. Description of Photo: Photograph 1: Typical fairway at Moffett Field Golf Course, looking east.

*P6. Date Constructed/Age and Source:

☒ Historic ☐ Prehistoric ☐ Both

Constructed 1959, altered 1968.

*P7. Owner and Address:

National Aeronautics and Space Administration

300 E. Street SW, Suite 5R30

Washington, DC 20546

*P8. Recorded by:

Daniel Herrick and Rebecca Riggs

Stantec, Inc.

555 Capitol Mall, Suite 650

Sacramento, CA 95814

*P9. Date Recorded: March 5, 2019

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: Stantec Consulting Services, Inc., "MFA Eastside Airfield New

Project Section 106 Technical Report" prepared for NASA Ames Research Center Historic Preservation Office (January 2021).

*Attachments: ☐ NONE ☒ Location Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☐ Other (List):

BUILDING, STRUCTURE, AND OBJECT RECORD

*Resource Name or # (Assigned by recorder) Moffett Field Golf Course

*NRHP Status Code 6Z

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B1. Historic Name: Moffett Field Golf Course

B2. Common Name: The Golf Club at Moffett Field

B3. Original Use: Golf Course B4. Present Use: Golf Course

*B5. Architectural Style: Recreational

*B6. Construction History: Original 9-hole course constructed 1959, expanded to 18-hole course in 1968.

*B7. Moved? ☒ No ☐ Yes ☐ Unknown Date: _____ Original Location: _____

*B8. Related Features: none

B9a. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme n/a Area n/a

Period of Significance n/a Property Type n/a Applicable Criteria n/a (Discuss importance in terms of historical or architectural

This intensive survey and evaluation find the Moffett Field Golf Course does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP) because of a lack of significance. The property has been evaluated in accordance with the National Park Service *National Register Bulletin No.15: How to apply the National Register Criteria for Evaluation* (1995), as well as the significance thresholds outlined in Department of Defense's Historic Context Statement for Recreational Properties, *A History of Recreation in the Military* (2001), and does not appear to be a historic property for the purposes of Section 106 Consultation (see continuation sheet).

B11. Additional Resource
Attributes: (List attributes and codes)

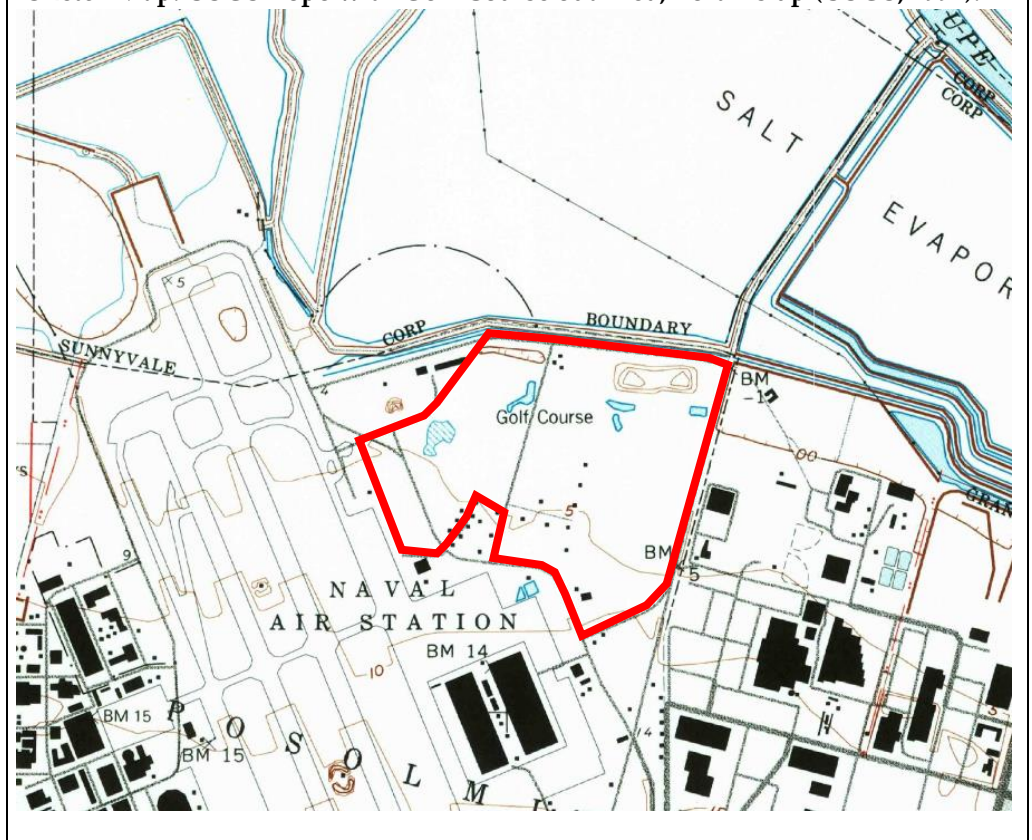
*B12. References: See footnotes

B13. Remarks:

*B14. Evaluator: Daniel Herrick
and Rebecca Riggs, Stantec
Inc.

*Date of Evaluation: March 2019

Sketch Map: USGS Topo with Golf Course outlined; north is up (USGS, 1991).



CONTINUATION SHEET

Property Name: Moffett Field Golf Course

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P3a. Description (Continued):

The Moffett Field Golf Course has an irregular layout on the northeast corner of MFA (**Photograph 2**). The course is oriented around various elements of MFA that were constructed prior to the course, including the High Capacity Explosive Magazines set near the center of the property, the former Missile Integration Facility (Building 511), and Zook Road, which extends northwards and separates the 14th-hole from the main portion of the course (**Figure 1**). A construction and stockpile yard and driving range are also located near the center of the property along Macon and Marriage Roads.



Figure 1: 2018 Satellite image of the Moffett Field Golf course. Note the High Capacity Explosive Magazines, stockpile yard, and driving range at center; north is up.¹

The main concentration of holes is located towards the southeast corner of the property, directly adjacent to Macon Road and north of the intersection with East Patrol Road. The main complex features the simple, single story club house building (Building 934) and a variety of simple, pre-fabricated maintenance and operation structures, as well as surface parking (**Photograph 3**). From this point, the course radiates north and towards the west, forming a loop. The fairways, the central feature of the course have a relatively flat and open topography with Kikuyu grass planted throughout. The borders of the fairways feature restrained

¹ Google Earth Pro, Image dated September 1, 2019, accessed September 15, 2019.

CONTINUATION SHEET

Property Name: Moffett Field Golf Course

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plantings of trees and shrubs, which provide some additional definition to each hole (**Photograph 4**). Additionally, these plantings along the edges of the fairway create framed vistas towards the mountains around the Santa Clara Valley, San Francisco Bay, and towards the Airfield, particularly the monumental Hangars 1, 2, and 3 (**Photograph 5**). The fairways are relatively linear features, although some feature angled configurations throughout the property. Small sections of paved pathways connect the various greens and tee boxes between the holes as one progresses through the course (**Photograph 6**). The interstitial space between the holes and fairways is largely flat, although some elevated berms are extant. These areas largely feature a mix of fill and natural grasses and shrub vegetation.

B10. Significance (Continued):

Historic Context

Moffett Federal Airfield

The land on which NASA ARC is located was originally part of the Rancho Posolmi Mexican land grant and has been in continuous use since 1844. Use of the land as agricultural fields for cattle grazing continued until the U.S. Navy expressed interest in developing the land as an airfield. They acquired the land and established Naval Air Station (NAS) Sunnyvale on August 2, 1931. Planned as an airfield for the Navy's dirigible program, Hangar 1 and the campus around it, including two small runways, were completed in 1933. The Navy used the facilities until they terminated their dirigible program in 1935 and transferred the airfield to the U.S. Army Air Corps, who enlarged the runways and used the site as their West Coast training headquarters until 1942. During this time, a portion of the property was also used by the National Advisory Committee for Aeronautics (NACA), who built the Ames Aeronautical Laboratory in 1939, including hangars and wind tunnels for research and testing. Following the bombing of Pearl Harbor, the Navy retook the facility and renamed it NAS Moffett Field. During the war they used it as the base for airships that patrolled the Pacific Coast and as a training center for airship pilots and also constructed Hangars 2 and 3 in 1943. During World War II, they expanded, purchasing 225 acres of land east of the airfield and enlarging the runways again. They continued enhancing the airfield in the post-war era, elongating the runways for newer, larger aircraft.

After World War II, Moffett Field continued operations as a Naval Air Transport Service base, with the addition of being a Helicopter Overhaul and Repair base in 1948. By 1949, Moffett Field was designated as an overall Military Air Transport Service base, becoming the largest Naval supported air transport base on the West Coast. Tensions over the growth of Communism reached their zenith in 1950 with the outbreak of the Korean War, and Moffett Field became a jet base for Navy aircraft carriers, housing F-3D Skynight, F2H-1, and F2H-2 Banshee aircraft. To meet these new responsibilities and accommodate the 300 aircraft stationed at Moffett Field, the Navy undertook the construction of new facilities. This included a new aircraft fueling system, a variety of machine and maintenance shops, an operations building and control tower, ammunition storage, and new barracks.²

With the onset of the Korean War in 1950, Moffett Field was used to train jet pilots and as the home base for Navy fighter jets and the facilities at the airfield were expanded again, with new buildings constructed

² Alexandra Cole, "Inventory and Evaluation of Cold War Era Historical Resources: Moffett Federal Airfield," prepared for NASA, prepared by SAIC (March 1999), 19.

CONTINUATION SHEET

Property Name: Moffett Field Golf Course

Page 5 of 17

around the perimeter of the property and both runways extended. By 1962, operations at Moffett Field were switched from jet to experimental antisubmarine aircraft.

Use of Moffett for training operations continued until 1994 when it was closed to military operations and the property was transferred in its entirety to NASA (formerly NACA) for use as an experimental test site. Moffett Field's primary purpose turned to advancing airborne science and technology, including space travel. After the full transfer of the field to NASA, a portion of it including hangars and munitions storage areas was utilized by the California Air National Guard (CANG) 129th Rescue Wing.³

Moffett Field in the Cold War-Era

Although World War II ended in 1945, it gave way to an ideological conflict between the U.S. and the Union of Soviet Socialist Republics (USSR) that extended into the late 1980s. Known as the Cold War, it was a period of secrecy and hostility between two of the world's superpowers, resulting in a nuclear arms race and worldwide struggle between the powers of democracy and Communism. As a direct result of this, both the U.S. and the USSR began developing nuclear weapons manufacturing and militarization. Tensions between the two countries ran high, especially during the 1950s when a series of invasions and exclusive economic treaties took place. During this time, the U.S. Department of Defense believed the best way to prevent a nuclear attack would be to have a large store of nuclear weapons with which to retaliate against any Soviet attacks. These weapons were based on land, air, and sea, called the strategic nuclear deterrence triad, to provide different tactical vantage points in case of deployment. Air Force bombers were equipped with nuclear missiles, as were Navy submarines, which patrolled the Soviet coast for the duration of the Cold War. With the onset of hostilities after World War II, Moffett Field became an important base for Naval operations during the Cold War.⁴

In 1962, in support of these larger Cold War operations of the U.S. Navy, MFA was designated the west coast center of operations for the newly developed anti-submarine mission. This mission was centered on the Lockheed P-3 Orion, which was a turbo-prop patrol aircraft that was specifically designed for maritime surveillance; it features a distinctly elongated tail that housed the equipment used to detect submarines. The P-3 Orion mission at MFA would continue to be the predominant mission at the airfield over the following decades.⁵

During the initial decade of operation at MFA, the P-3 mission grew to include over eight squadrons of aircrafts. These operations utilized many of the pre-existing buildings and structures at MFA that were constructed during the previous missions at the property. The squadrons and their maintenance operations were largely housed in Hangars 2 and 3 at the eastside of the airfield, while Hangar 1 was largely used for training purposes. Some purpose-built buildings and structures were constructed to facilitate key operations of the P-3 Orion mission, including a complex of administrative and operations facilities at the eastern side of the airfield. This included the construction of an administration building (Building 300; demolished), a communications/classroom building (Building 654), and a base operations and communications building

³ AECOM, "Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California," prepared for NASA Ames Research Center (November 26, 2013), 3-2 – 3-7.

⁴ Alexandra Cole, "Inventory and Evaluation of Cold War Era Historical Resources," 15-18.

⁵ Cole, "Inventory and Evaluation of Cold War Era Historical Resources," 25-27.

CONTINUATION SHEET

Property Name: Moffett Field Golf Course

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(Building 656), and an avionics shop (Building 650). Other secondary and tertiary structures were also constructed in support of the P-3 Orion mission, but were largely used as general office, storage space, and for munitions.⁶

Following the realignment of MFA in 1994, the buildings that largely supported the P-3 Orion were transferred from the US Navy to NASA, who in turn leased these facilities to CAANG. CAANG continues to operate many of these buildings and structures today.

Military Golf Courses

The desire for recreational programs and facilities in the military dates to the American Revolution, when the Articles of War in 1775 provided for "sutlers," whose sole purpose was to meet soldier's personal wants and needs. In the 1800s, soldiers established Canteen Associations and paid dues to fund exercise and game facilities. By 1895, the War Department created Post Exchange and established one at every military base. Post Exchanges were a combination of recreation areas, library, store, and usually a restaurant. In 1918, Congress set aside funding for athletic activities for military personnel. The War Department (renamed the Department of Defense in 1948) provided funding for recreational programs and activities via Post Exchanges through the 1940s. Concurrently golf became a popular on base pastime for service members.⁷

One of the first military developed golf courses was constructed at Fort Leavenworth in Kansas in 1932. It was followed by a course at Fort Sam Houston in Texas in 1937 and by the Cole Park Golf Club at Fort Campbell in Kentucky in 1947. Golf experienced a surge in popularity as a recreational activity on military bases during World War II. By the 1950s, it was especially popular on fair-weather bases. Some bases even constructing two courses, one for officers and one for enlisted.⁸

However, golf courses in the proximity to military institutions predates this period of recreational expansion. In 1895, a small 9-hole golf course was constructed in the South Post region of the Presidio in San Francisco. It was one of the first golf courses on the West Coast, and although it was located on the grounds of the Presidio, the course was operated by the private San Francisco Golf Club until 1905, when it came under the control of the Presidio Golf Club. They undertook a major expansion of the golf course in 1920, adding nine more holes. The course also underwent modifications in the 1930s after the construction of the Golden Gate Bridge. While operation of the course was always privately managed by the Presidio Golf Club, the course was located on military land and officers were given special course privileges, reaffirming the military's belief that personnel needed access to recreational activities.⁹

⁶ Cole, "Inventory and Evaluation of Cold War Era Historical Resources," 33-37.

⁷ Military OneSource, "History of Military Recreation Programs," Morale, Welfare, and Recreation, accessed September 6, 2019, <https://www.militaryonesource.mil/leaders-service-providers/morale-welfare-and-recreation/history-of-military-recreation-programs>.

⁸ Adam Smith, Megan Tooker, Chelsea Pogorelac, and Chris Cochran, *A History of Recreation in the Military* (U.S. Army Engineer Research and Development Center, Department of Defense Legacy Resource Management Program, Legacy Project # 08-388, 2011), 65, 175.

⁹ United States Department of the Interior, *National Register of Historic Places Presidio of San Francisco National Historic Landmark District* (National Park Service, 1992), 7-50, 7-160, 7-161, 8-39.

CONTINUATION SHEET

Property Name: Moffett Field Golf Course

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Military golf courses are not limited to the United States. There are 234 DoD owned and operated golf courses around the world, including parts of the Caribbean, Europe, Asia, and the Middle East. Almost all the existing courses are located on military bases, but some are separate from military facilities and advertised as resorts. Courses are primarily run by the military's Morale, Warfare, and Recreation program and they are maintained to support troop morale and give them an activity to participate in during their down time. Courses are also accessible for veterans and some are open to civilians. At one time, there were over 300 golf courses operated worldwide by the DoD, but in 1975 Senator William Proxmire lambasted defense officials for spending \$14 million dollars a year to maintain the courses and they began to shutter courses with deficits. Golf has retained its popularity though, as evidenced by the 234 courses still under operation by the DoD.¹⁰

Property History

Originally constructed in 1959 as a 9-hole golf course, the recreational property is situated around World War II-era high capacity magazine bunkers (**Figure 2**). The utilization of this space as a golf course was determined an appropriate low-density use surrounding the High Explosive Magazines, which was required to have a consistent safety buffer in the event of an accidental explosion.¹¹ The original 9-hole portion of the golf course was designed by Bob E. Baldock, a prominent California-based golf course architect who designed hundreds of courses throughout the United States. The original nine holes were located at the eastern portion of the existing course (**Figure 3**). A clubhouse was constructed during this period. The original clubhouse was a simple building that featured a simple rectilinear volume; this was later expanded with several additions to the current configuration of Building 934.

Around 1968, the course was expanded to its current 18-holes configuration. This involved the removal of the preexisting magazines that were organized in an arc directly east of the airfield (**Figure 4**). The back-nine was designed by Robert Muir Graves, another notable golf course architect who is responsible for a number of noteworthy and champion golf courses throughout the United States and Canada. Based upon several aerial photographs, the golf course does not appear to have undergone changes since it was expanded in 1968, aside from the construction of maintenance and operations support facilities and a driving range, all of which are located along the northern edge of Macon Road, west of the clubhouse.

¹⁰ AJ Vicens and Eric Wuestewald, "Green Zones: A Map of the US Military's Golf Courses," *Mother Jones* (January 16, 2014), accessed September 6, 2019, <https://www.motherjones.com/politics/2014/01/pentagon-military-golf-courses-map/>.

¹¹ AECOM, *Historic Property Survey Report*, 3.5.

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Figure 2: 1956 Aerial Photograph of the Safety Buffer Zone and Magazine Area at MFA; north is up.¹²

¹² UCSB Library, Historic Aerial Photograph Collection, "Flight CIV_1956 Frame 4R-194" (January 1, 1956).

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Figure 3: 1963 Aerial Photograph of the Safety Buffer Zone at MFA with the original 9-hole configuration of the Moffett Field Golf Course at left; north is up.¹³

¹³ UCSB Library, Historic Aerial Photograph Collection, "Flight CAS_65_130, Frame 6-76" (May 1, 1965).

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Property Name: Moffett Field Golf Course

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Figure 4: 1968 Aerial Photograph of the Safety Buffer Zone at MFA with the 18-hole configuration of the Moffett Field Golf Course; north is up.¹⁴

Golf Course Designers

Bob E. Baldock

Born in 1908, Robert E. "Bob" Baldock was a Class A PGA professional golfer in who shifted his interest to irrigation and landscape design after he retired from competitive play. He began designing golf courses in the 1950s and in 1959, he founded the Dorado Pacific Investment Company, Inc., which operated as a golf

¹⁴ UCSB Library, Historic Aerial Photograph Collection, "Flight CAS_2310 Frame 1-147" (May 2, 1968).

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course development firm. In 1960, he was retained by the Monterey Peninsula Club to design a second 18-hole golf course at their club. Known as "The Shore" course, it was designed to give players sweeping views of the California coastline. It was also intended for play in the annual Pebble Beach golf tournament, to add another course option. The Shore course was redesigned in 2003 by Mike Strantz and has been used continuously for the PGA tour.

By 1966, Baldock's development company declared bankruptcy, but he continued to consult and design golf courses as an independent contractor through the 1970s. When he died in 2000, he was attributed with planning over 350 golf courses, in five different states throughout his career. In Northern California alone, he designed 25 golf courses, including country clubs, municipal complexes, and military bases.¹⁵

Robert Muir Graves

Born in Michigan in 1930, Robert Muir Graves earned a degree in landscape architecture in 1955 from the University of California, Berkeley. In the early years of his career he practiced landscape architecture, his passion for golf led him to refocus on the design and development of golf courses. Most of his career focused on developing municipal and publicly accessible courses throughout California, the Pacific Northwest, and other Western States. His approach was typically minimalist and often utilized the natural environment wherever feasible, retaining large swaths of existing vegetation and natural topographic contours. Cited as one of his signature design elements, Graves often left stumps of trees within the fairways of his courses to provide an additional hazard and aspect of play. In some instances, these stumps would be uprooted and left; the exposed root system created a natural and picturesque quality to the course, while provide a challenging element to the golfer.¹⁶

Of his designs, some of the most prolific and celebrated courses in California include the Sea Ranch Golf Links in Mendocino County, Lake Merced Golf and Country Club in San Francisco, Sonoma National Golf Course in Sonoma county, the Golf Club at Quail Lodge in Carmel-by-the Sea, the Maderas Golf Club in Poway, and the Big Canyon Country Club in Newport Beach. Other well-known courses include the Buffalo Hill Golf Club in Kalispell, Montana; Big Meadows Golf Course at Black Butte Ranch, Oregon; and Port Ludlow Golf Course in Port Ludlow, Washington.¹⁷

¹⁵ Social Security Death Index Records, Robert E. Baldock, Newspaper Archive, accessed September 6, 2019, <https://newspaperarchive.com/robert-baldock-ssdi-hhijfgab/>; Steve Pajak, "Golf Plus: Sacramento Region's Golf Landscape Began Decades Ago with a Piece of Land and a Vision," *The Sacramento Bee*, April 22, 2014; "Golf Course Development Firm Goes Bankrupt," *The Fresno Bee Republican*, February 19, 1966; The Golf Club at Moffett Field, *Course History*, accessed September 6, 2019, <https://moffettgolf.com/course-information/>; Monterey Peninsula Country Club, *Our Story*, accessed September 6, 2019, <https://www.mppccpb.org/default.aspx>; "The Monterey Peninsula Club," *The San Francisco Examiner*, August 19, 1960; PGA Tour, AT&T Pebble Beach Pro-Am Schedule, accessed September 6, 2019, <https://pgatourmedia.pgatourhq.com/Tour/WebTemplate/media.nsf/vwMainDisplay/E8D81C993EB6549085257C4A004DD650?opendocument>.

¹⁶ Robert Muir Graves," American Society of Golf Course Architects, accessed September 10, 2019, <https://asgca.org/architect/rgraves/>.

¹⁷ "Golf Architects/ Designers – Robert Muir Graves," *The Tee Times*, accessed September 10, 2019, <http://teetimes.info/golf-architects-robert-muir-graves/>.

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Graves was an influential figure in the development of golf course architecture, lecturing at several prominent landscape architecture schools throughout the country, authoring books on the topic, and serving as the president for the American Society of Golf Course Architects in the 1970s.¹⁸ He continued to work in the Western US, settling in Bend, Oregon; he passed away in 2003.

Evaluation

The Moffett Field Golf Course is identified in the AECOM *Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California* (November 26, 2013) as part of the "Safety Buffer Zone," a character-defining landscape feature within the historic district for its association with the contributing High Explosive Magazines (Buildings 70-74, 143, & 147) located at the northeast corner of MFA.¹⁹ As stated in the survey report, the Safety Buffer Zone is characterized by an expanse of undeveloped area surrounding the magazine area as a standard Navy safety measure. While the golf course was introduced to this area of the airfield later, ca.1959, the magazines were still in use and the introduction of this low-capacity use was seen as consistent with the goals of the Safety Buffer Zone. As such, the Moffett Field Golf Course, as part of the Safety Buffer Zone, is a character-defining landscape feature of the expanded NAS Sunnyvale Historic District, which was previously determined eligible for the NRHP in the AECOM survey report and subsequently concurred upon for the purposes of Section 106 consultation purposes at MFA.

However, it does not appear that the golf course has been previously evaluated for potential eligibility for listing in the NRHP.

NRHP Evaluation

The evaluation conducted as part of this effort utilized the NRHP significance criteria, as well as the evaluation threshold guidance included in the DoD's 2008 Historic Context Statement on Military Recreational Properties.²⁰ This document states that in order for military golf courses to be NRHP-eligible, it must have significant associations with:

- Large scale military build-up efforts,
- Direct, significant connections to mission operations or research and development
- Exhibits exceptional golf course design, and/or designed by a master architect.²¹

Per the evaluation threshold guidance for military recreational properties, the Moffett Field Golf Course does not appear to be individually eligible for listing on the NRHP under any of the significance criteria. The course was constructed purely as a recreational property for service personnel and support staff at MFA, first as a 9-hole course during the jet operations in 1959, and later expanded to an 18-hole course in the 1960s during the P-3 Anti-Submarine mission. Its construction is not directly related to either mission or other

¹⁸ "Graves," American Society of Golf Course Architects.

¹⁹ AECOM, *Historic Property Survey Report*, 5.4-5.5.

²⁰ Adam Smith et al, *A History of Recreation in the Military*, 171-173.

²¹ Ibid., 172-173.

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airfield operations, nor is it associated with a large military buildup at MFA. Therefore, the property does not appear to be significant under Criteria A.

The Moffett Field Golf Course does not appear to have any associations with significant individuals, and does not appear to be eligible under Criteria B. In terms of design, the Moffett Field Golf Course was originally designed by noteworthy golf course architect, Bob E. Baldock, and later expanded to its current 18-hole configuration by designer Robert Muir Graves. Both are responsible for designing hundreds of golf courses throughout the United States, including courses at Pebble Beach in Monterrey, California. The Moffett Field Golf Course does not appear to rise to a level of significance within either designer's body of work. Additionally, the phased development of the course from 9-hole to 18-hole does not clearly embody the work of either designer, nor does it exhibit a single cohesive design that rises to a level of significance for golf course architecture. Therefore, the Moffett Field Golf Course does not appear to be significant under Criteria C. The property is unlikely to yield any significant information related to history or pre-history, and therefore is not eligible under Criteria D.

The Moffett Field Golf Course, although constructed within the period of significance of the expanded NAS Sunnyvale Historic District (1930-1961), was not directly associated with the jet fighter mission and does not qualify as a contributor. However, it does continue to be associated with the Safety Buffer Zone, which is a character-defining landscape feature of the expanded NAS Sunnyvale Historic District. As stated previously, the Safety Buffer Zone is a predominantly open and undeveloped expanse of land that surrounds the munition magazines located at the northeast corner of the airfield. While this does not qualify the Moffett Field Golf Course as eligible for listing in the NRHP, the general flat and open topography is considered an important landscape feature within the overall historic setting and character of the expanded NAS Sunnyvale Historic District

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P5. Photographs (Continued):



Photograph 2: Aerial photograph of the Moffett Field Golf Course from the northeast corner, looking south. Note the High Explosive Magazines and surrounding area at left.²²

²² The Golf Club at Moffett Field accessed September 16, 2019, <https://www.moffettgolf.com/>.

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Photograph 3: Main complex with the surface parking (left) and Building 934 (right), looking northwest.



Photograph 4: Typical fairway with limited tree plantings and flat, open topography, looking north.

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Photograph 5: View along the 14th Fairway towards Hangar 2 and 3.



Photograph 6: Typical conditions with green , sand trap , and tee boxes, looking east from the main complex.

Primary#

HRI#

Trinomial

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***Resource Name or #** (Assigned by recorder) Moffett Field Building 511

***Map Name:** USGS Topo Map, Mountain View, CA ***Scale:** 1:24,000 ***Date of map:** 1991

